# INDEPENDENT ORBITER ASSESSMENT

ASSESSMENT
OF THE
EPD&C
REMOTE MANIPULATOR
SYSTEM

**26 FEBRUARY 1988** 

#### MCDONNELL DOUGLAS ASTRONAUTICS COMPANY HOUSTON DIVISION

### SPACE TRANSPORTATION SYSTEM ENGINEERING AND OPERATIONS SUPPORT

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INDEPENDENT ORBITER ASSESSMENT ASSESSMENT OF THE EPD&C/REMOTE MANIPULATOR SYSTEM FMEA/CIL

#### 04 MARCH 1988

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#### CONTENTS

			Page
1.0	EXEC	CUTIVE SUMMARY	1
2.0	INTE	RODUCTION	4
	2.2	Purpose Scope Analysis Approach RMS Ground Rules and Assumptions	4 4 4 5
3.0	SYSI	TEM DESCRIPTION	6
	3.2	Design and Function Interfaces and Locations Hierarchy	6 7 7
4.0	ASSI	ESSMENT RESULTS	13
		Assessment Results - EPD&C/RMS Remote Manipulator Arm Subsystem (05-6IA) Assessment Results - EPD&C/RMS Manipulator Deploy	24
	4.3	Control Subsystem (05-6IB) Assessment Results - EPD&C/RMS Manipulator Latch Control Subsystem (05-6IC)	25 25
	4.4	Assessment Results - EPD&C/RMS Shoulder/Retention Arm and Jettison Subsystem (05-6ID)	26
5.0	REFI	ERENCES	27
APPE	NDIX	A ACRONYMS	A-1
APPE	NDIX	B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS	B-1
	B.1 B.2 B.3	Project Level Ground Rules and Assumptions	B-2 B-4 B-6
APPE	NDIX	C ASSESSMENT WORKSHEETS	C-1
APPE	NDIX	D CRITICAL ITEMS	D-1
APPE	NDIX	E ANALYSIS WORKSHEETS	E-1
APPE	NDIX	F NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATION	F-1

		List of Figures	
		•	Page
Figure	1	- EPD&C/RMS FMEA/CIL ASSESSMENT	3 8 9
Figure	2	- EPD&C/RMS SUBSYSTEM (05-61) OVERVIEW	8
Figure	3	- EPD&C/RMS REMOTE MANIPULATOR ARM (05-61A)	9
		- EPD&C/RMS MANIPULATOR DEPLOY CONTROL (05-61B)	
Figure	5	- EPD&C/RMS MANIPULATOR LATCH CONTROL (05-61C)	11
Figure	6	- EPD&C/RMS MANIPULATOR ARM SHOULDER JETTISON	
		AND RETENTION ARM JETTISON (05-6ID)	12
		List of Tables	Page
Table	I	- SUMMARY OF IOA FMEA ASSESSMENT	13
Table	II	- SUMMARY OF IOA CIL ASSESSMENT	14
Table :	III	- SUMMARY OF IOA RECOMMENDED FAILURE MODES CRITICALITIES	14
Table	IV	- SUMMARY OF IOA RECOMMENDED CRITICAL ITEMS	15

16

Table V - IOA WORKSHEET NUMBERS

## Independent Orbiter Assessment Assessment of the EPD&C/RMS FMEA CIL

#### 1.0 EXECUTIVE SUMMARY

The McDonnell Douglas Astronautics Company (MDAC) was selected in June 1986 to perform an Independent Orbiter Assessment (IOA) of the Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL). Direction was given by the STS Orbiter and GFE Projects Office to perform the hardware analysis using the instructions and ground rules defined in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986.

The IOA effort first completed an analysis of the Electrical Power Distribution and Control (EPD&C)/Remote Manipulator System (RMS) hardware, generating draft failure modes and potential critical items. To preserve independence, this analysis was accomplished without reliance upon the results contained within the NASA FMEA/CIL documentation. The IOA analysis of the EPD&C/RMS hardware initially generated three hundred and fortyfive (345) failure mode worksheets and identified one hundred and seventeen (117) Potential Critical Items (PCIs) before starting the assessment process. These analysis results were compared to the proposed NASA Post 51-L baseline of one hundred and thirtytwo (132) FMEAs and sixty-six (66) CIL items, which were generated using the NSTS-22206 FMEA/CIL instructions. generated failure mode analysis worksheets for both port and starboard Remote Manipulator Systems whereas the NASA generated FMEAs for only one system (did not specify which). analysis was performed on a component level for components assigned reference designator numbers on the drawings with one component per worksheet. The NASA analysis was performed with like multiple similar components on one FMEA. In some cases the NASA FMEAs were generated for an entire circuit without necessarily specifying the components included in the circuit by any identification number, thus direct comparisons of the IOA and NASA analyses were not meaningful in the sense of numbers of failures and identification of criticalities that have any uniformity. Efforts to compare the two analyses required consolidation of components in all but a few cases where the items were single point failure items as some of the switches Twenty-eight (28) additional IOA failure mode were found to be. analysis worksheets were generated to facilitate comparison. Upon completion of the assessment, five (5) issue items were identified that involved critical items where IOA recommends that NASA FMEAs generated for that failure mode of the component or where the NASA Criticality for that failure mode of that component be upgraded. There were also six (6) issues identified where IOA recommends upgrading of the NASA assigned criticality but these are not critical items list candidates.

Some of the miscompares arose due to differences between the NASA and IOA FMEA/CIL preparation instructions. NASA had used an older ground rules document which has since been superseded by the NSTS 22206 used by the IOA. After comparison, there were no other discrepancies found that were not already identified by NASA, and the remaining issues may be attributed to differences in ground rules.

It may be noted that numerical values appear to disagree between charts and tables. Figure 1 "Remote Manipulator Arm" block lists 5 issues for FMEAs and 5 issues for CIL items. The FMEA issues are also CIL issues. Figure 1 "Arm/Shoulder Jettison" block lists 6 FMEA issues which are not considered critical items.

### **EPD&C/RMS ASSESSMENT OVERVIEW**

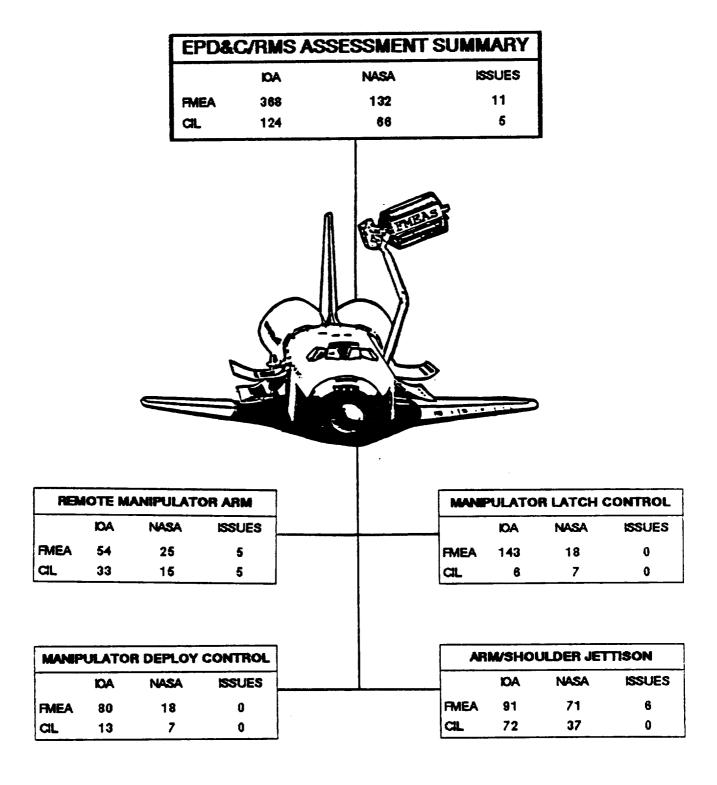


Figure 1 - EPD&C/RMS FMEA/CIL ASSESSMENT

#### 2.0 INTRODUCTION

#### 2.1 Purpose

The 51-L Challenger accident prompted the NASA to readdress safety policies, concepts, and rationale being used in the National Space Transportation System (NSTS). The NSTS Office has undertaken the task of reevaluating the FMEA/CIL for the Space Shuttle design. The MDAC is providing an independent assessment of the proposed Post 51-L Orbiter FMEA/CIL for completeness and technical accuracy.

#### 2.2 Scope

The scope of the independent FMEA/CIL assessment activity encompasses those Shuttle Orbiter subsystems and GFE hardware identified in the Space Shuttle Independent FMEA/CIL Assessment Contractor Statement of Work. Each subsystem analysis addresses hardware, functions, internal and external interfaces, and operational requirements for all mission phases.

#### 2.3 Analysis Approach

The independent analysis approach is a top-down analysis utilizing as-built drawings to breakdown the respective subsystem into components and low-level hardware items. Each hardware item is evaluated for failure mode, effects, and criticality. These data are documented in the respective subsystem analysis report, and are used to assess the proposed Post 51-L NASA and Prime Contractor FMEA/CIL. The IOA analysis approach is summarized in the following Steps 1.0 through 3.0. Step 4.0 summarizes the assessment of the NASA and Prime Contractor FMEA/CIL which is documented in this report.

- Step 1.0 Subsystem Familiarization
  - 1.1 Define subsystem functions
  - 1.2 Define subsystem components
  - 1.3 Define subsystem specific ground rules and assumptions
- Step 2.0 Define subsystem analysis diagram
  - 2.1 Define subsystem
  - 2.2 Define major assemblies
  - 2.3 Develop detailed subsystem representations
- Step 3.0 Failure events definition
  - 3.1 Construct matrix of failure modes
  - 3.2 Document IOA analysis results
- Step 4.0 Compare IOA analysis data to NASA FMEA/CIL
  - 4.1 Resolve differences
  - 4.2 Review in-house
  - 4.3 Document assessment issues
  - 4.4 Forward findings to Project Manager

### 2.4 Ground Rules and Assumptions

The ground rules and assumptions used in the IOA are defined in Appendix B. The EPD&C/RMS specific ground rules and assumptions are defined in paragraph B.3 of Appendix B.

#### 3.0 SUBSYSTEM DESCRIPTION

#### 3.1 Design and Function

The EPD&C/RMS subsystem provides the electrical power and power control circuitry required to safely deploy, operate, control, and stow one port and one starboard RMS. The EPD&C/RMS is a subset of the Orbiter EPD&C subsystem and uses the same three main busses and the same type of distribution and control hardware that is used to supply electrical power to the rest of the space shuttle subsystems. In addition, electrical power and control circuitry is provided to guillotine the appropriate cabling and jettison either or both the remote manipulator arms in the event it becomes necessary for crew/vehicle safety.

Although the EPD&C/RMS subsystem is designed to supply the required electrical power to both a port and a starboard RMS on a given mission, only one RMS can be powered-on at a given time. The port and starboard RMSs are essentially mirror images of one another. Some of the EPD&C/RMS electrical power control switches are common to both the port and starboard systems and some switches are dedicated to one or the other RMS. The port and starboard EPD&C/RMS subsystems are essentially identical in design. The port and starboard systems do differ in that power and control bus assignments are not the same for both systems.

The EPD&C/RMS subsystem consists of the following subdivisions:

- The EPD&C/RMS Remote Manipulator Arm (05-6IA) subdivision consists of the hardware to provide Main Bus 28 volts Direct Current (DC) and 115 volts, three-phase (3-PH) and single-phase (1-PH), 400 Hertz (Hz) Alternating Current (AC) primary and backup (standby redundant) power to both the port and starboard (only one at a time) Remote Manipulator Arms for operation of its control electronics, heaters, lights and drive motors.
- 2. The EPD&C/RMS Manipulator Deploy Control (05-61) subdivision consists of the hardware to provide Main Bus 28 volts DC and 115 volts, 3-phase (3-PH), 400 Hz AC power to the Motor Control Assemblies (MCAs) to control power to the two electrical motors that drive the actuator to physically drive the appropriate Manipulator Positioning Mechanism (MPM) to stow or deploy the port and starboard Remote Manipulator Arms.

#### 3.1 Design and Function cont'd

- 3. The EPD&C/RMS Manipulator Latch Control (05-6IC) subdivision consists of the hardware to provide Main Bus 28 volts DC and 115 volts, 3-phase (3-PH), 400 Hz AC power to the MCAs to control power to the three sets of electrical motor pairs that drive the retention latch actuators to release or latch position. There are three retention latch mechanisms with one located at each of the forward, mid, and aft positions for the port arm and another set for the starboard arm.
- 4. The EPD&C/RMS Manipulator Arm Shoulder Jettison and Retention Arm Jettison (05-6ID) subdivision consists of the hardware to provide the 28 volts DC and control switching to safely arm and fire the Pyro Initiator Controllers (PICs) that enable detonation of the explosives to guillotine the necessary RMS cables and jettison either or both the port and/or starboard arms if it becomes necessary for crew/vehicle safety.

#### 3.2 Interfaces and Locations

The remote manipulator arm is attached to the Orbiter longeron (port, starboard, or both) through a roll-out deployment mechanism. The RMS is operated by a crewmember using direct viewing and Closed Circuit Television (CCTV) from the Display and Control (D&C) station on the aft flight deck. Most of the EPD&C/RMS switches are located on panels A8A2 and A14. The Payload Bay Mechanical (PLBM) power switches that control the power to the Motor Control Assemblies are located on panel R13A1 in the cockpit and the circuit breakers are located on the standard circuit breaker panels.

#### 3.3 Hierarchy

Figure 2 illustrates the Hierarchy of the EPD&C/RMS and the corresponding subdivisions. The subdivisions are represented in Figures 3 through 6.

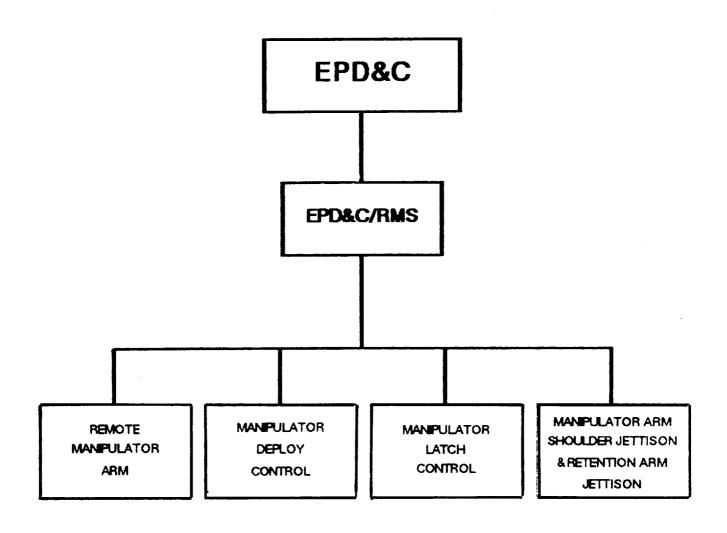


Figure 2 - EPD&C/RMS SUBSYSTEM (05-61) OVERVIEW

# REMOTE MANIPULATOR ARM

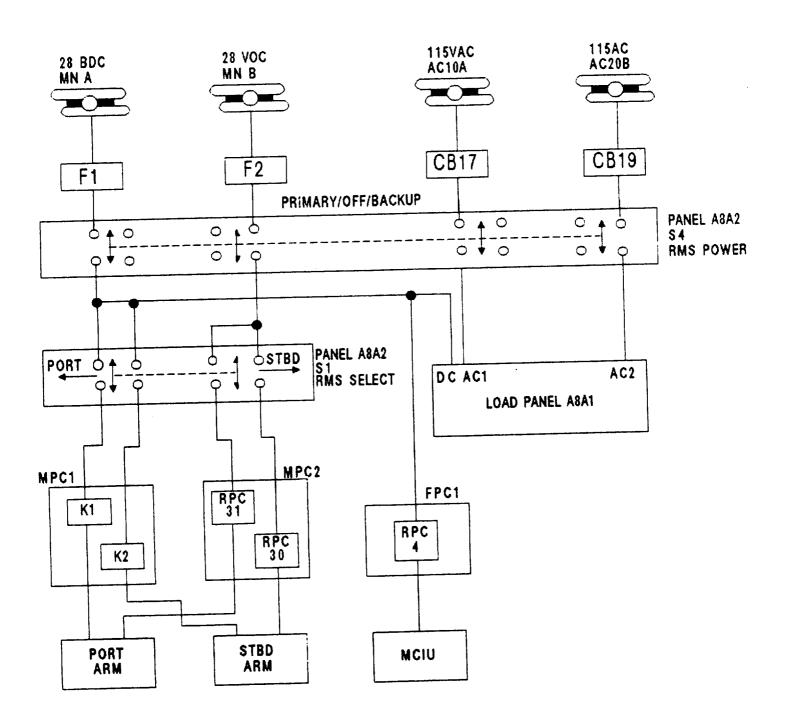


Figure 3 - EPD&C/RMS REMOTE MANIPULATOR ARM (05-61A)

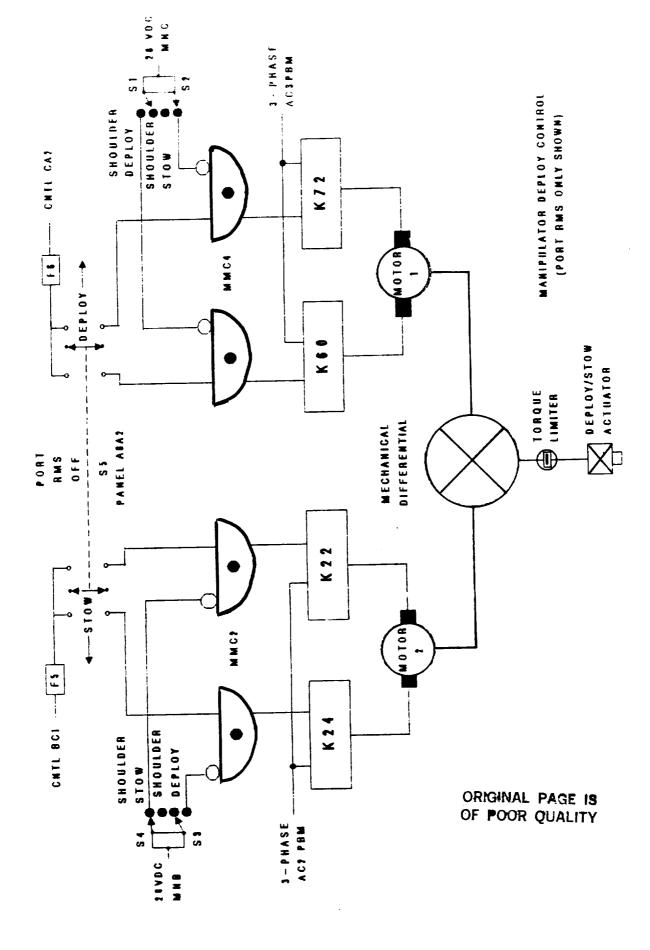
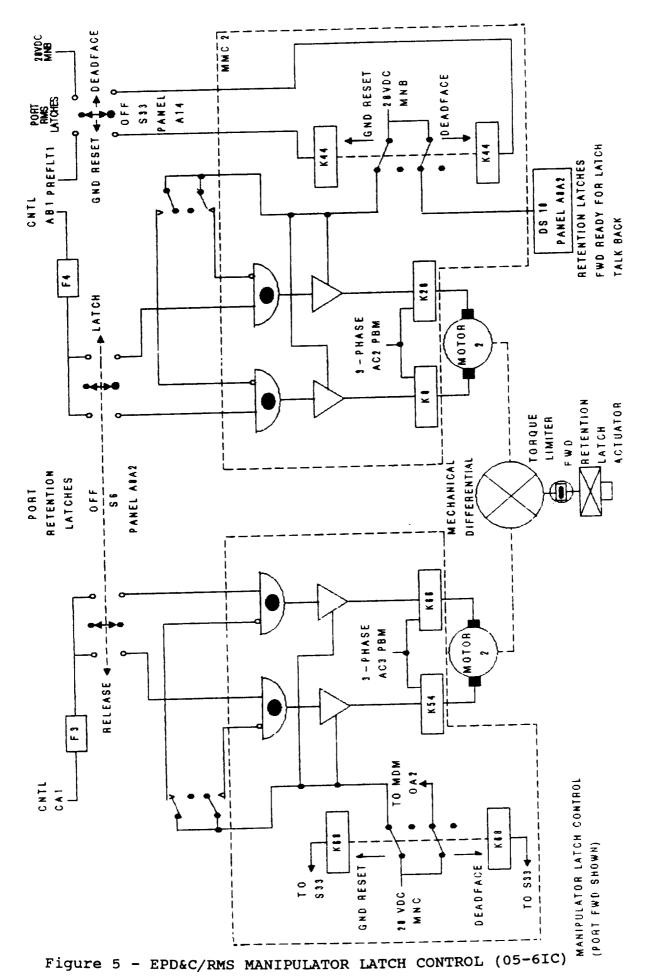


Figure 4 - EPD&C/RMS MANIPULATOR DEPLOY CONTROL (05-61B)



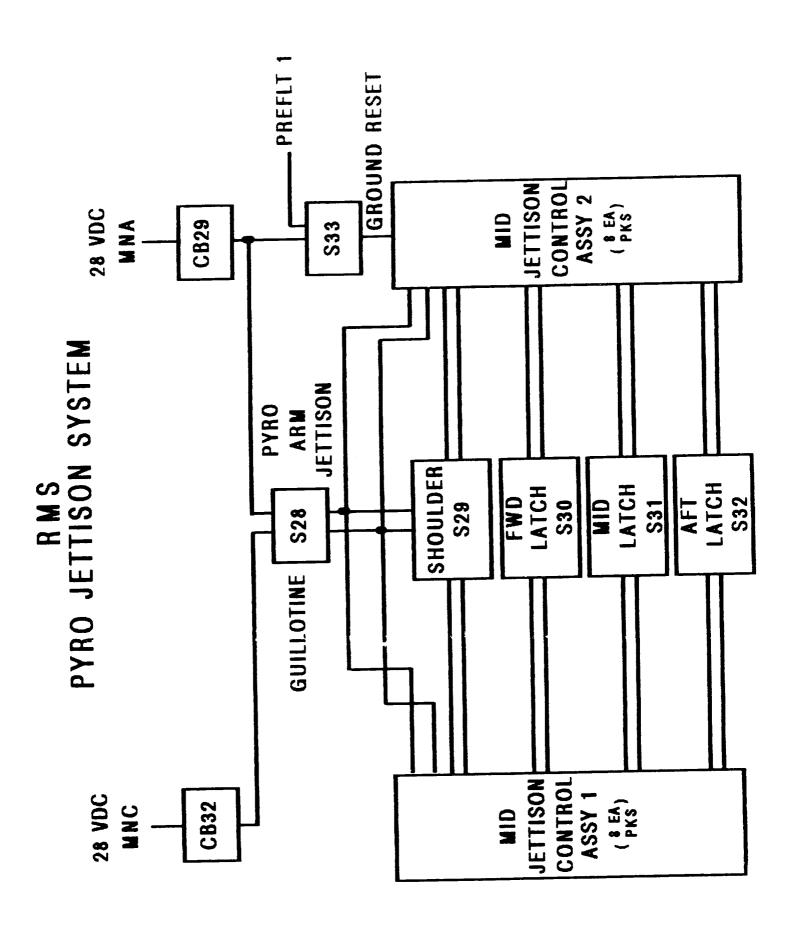


Figure 6 - EPD&C/RMS MANIPULATOR ARM SHOULDER JETTISON AND RETENTION ARM JETTISON (05-61D)

#### 4.0 ASSESSMENT RESULTS

The IOA analysis of the EPD&C/RMS hardware initially generated three hundred and forty-five (345) failure mode worksheets and identified one hundred and seventeen (117) Potential Critical Items (PCIs) before starting the assessment process. analysis results were compared to the proposed NASA Post 51-L baseline of one hundred and thirty-two (132) FMEAs and sixty-six (66) CIL items, which were generated using the NSTS-22206 FMEA/CIL instructions. IOA generated failure mode analysis worksheets for both port and starboard Remote Manipulator Systems whereas the NASA generated FMEAs for only one system (did not specify which). The IOA analysis was performed on a component level for components assigned reference designator numbers on the drawings with one component per worksheet. The NASA analysis was performed with like multiple similar components on one FMEA. some cases the NASA FMEAs were generated for an entire circuit without necessarily specifying the components included in the circuit by any identification number, thus direct comparisons of the IOA and NASA analyses were not meaningful in the sense of numbers of failures and identification of criticalities that have any uniformity. Efforts to compare the two analyses required consolidation of components in all but a few cases where the items were single point failure items as some of the switches were found to be. Twenty-eight (28) additional IOA failure mode analysis worksheets were generated to facilitate comparison. Upon completion of the assessment, five (5) issue items were identified that involved critical items where IOA recommends that NASA FMEAs generated for that failure mode of the component or where the NASA Criticality for that failure mode of that component be upgraded. There were also six (6) issues identified where IOA recommends upgrading of the NASA assigned criticality but these are not critical items list candidates. A summary of the quantity of NASA FMEAs assessed, versus the recommended IOA baseline, and any issues identified is presented in Table I.

Table I Summary of IOA FMEA Assessment					
Subdivision	NASA	IOA	Issues		
05-6IA	25	54	5		
05-6IB	18	80	0		
05-6IC	18	143	0		
05-6ID	71	91	6		
TOTAL	132	368	11		

A summary of the quantity of NASA CIL items assessed, versus the recommended IOA baseline, and any issues identified is presented in Table II.

Table II Summary of IOA CIL Assessment					
Subdivision	NASA	IOA	Issues		
05-6IA	15	33	5		
05-6IB	7	13	o		
05-6IC	7	6	0		
05-6ID	37	72	0		
TOTAL	66	124	5		

Appendix C presents the detailed assessment worksheets for each failure mode identified and assessed. Appendix D highlights the NASA Critical Items and corresponding IOA worksheet ID. Appendix E contains IOA analysis worksheets supplementing previous analysis results reported in Space Transportation System Engineering and Operations Support (STSEOS) Working Paper No. 1.0-WP-VA86001-26, Analysis of the EPD&C/RMS Subsystem, 27 February, 1987. Appendix F provides a cross reference between the NASA FMEA and corresponding IOA worksheet(s). IOA recommendations are also summarized.

Table III presents a summary of the IOA recommended failure criticalities for the Post 51-L FMEA baseline. Further discussion of each of these subdivisions and the applicable failure modes is provided in subsequent paragraphs.

+								
TABLE III Summary of IOA Recommended Failure Criticalities								
Criticalit	y:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
05-6IA		4	16	13	1	8	12	54
05-6IB		10	1	2	4	31	32	80
05-6IC		0	6	0	4	58	75	143
05-6ID		10	62	0	0	13	6	91
TOTAL		24	85	15	9	110	125	368
T				r				<u> </u>

Of the failure modes analyzed, one hundred and twenty-four (124) were determined to be critical items. A summary of the IOA recommended critical items is presented in Table IV.

1	TABLE IV Summary of IOA Recommended Critical Items							
+	Criticality:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
	05-6IA	4	16	13	0	0	0	33
	05-6IB	10	1	2	0	0	0	13
	05-6IC	o	6	0	0	0	0	6
	05-6ID	10	62	0	0	0	0	72
+	TOTAL	24	85	15	0	0	0	124
ㅗ		+			r		•	•

The scheme for assigning IOA assessment (Appendix C) and analysis (Appendix E) worksheet numbers is shown in Table V. For convenience Table V is subdivided into V-A thru V-D corresponding to the four major subdivisions of the EPD&C/RMS System.

TABLE V-A IOA WORKSHEET NUMBERS	(1)
Remote Manipulator Arm Components (05-6IA)	ID Number
SWITCH, S4	RMS-4001
SWITCH, S4	RMS-4002
SWITCH, S4	RMS-4003
SWITCH, S4	RMS-4004
SWITCH, S4	RMS-4005
SWITCH, S4	RMS-4006
SWITCH, S1	RMS-4007
SWITCH, S1	RMS-4008
SWITCH, S1	RMS-4009
SWITCH, S8	RMS-4010
SWITCH, S10	RMS-4011
SWITCHES, S8, S10	RMS-4012
SWITCH, S7	RMS-4013
SWITCH, S9	RMS-4014
SWITCHES, S7, S9	RMS-4015
FUSE, F1	RMS-4016
FUSE, F1	RMS-4017
FUSE, F2	RMS-4018
FUSE, F2	RMS-4019
RESISTOR, A3R2	RMS-4020
RESISTOR, A3R3	RMS-4021
RESISTOR, A2R2	RMS-4022
RESISTOR, A2R3	RMS-4023
RESISTOR, A1R1	RMS-4024
RESISTOR, A1R2	RMS-4025
RESISTOR, A3R1	RMS-4026
RESISTOR, A2R1	RMS-4027
CIRCUIT BREAKER, CB17	RMS-4028
CIRCUIT BREAKER, CB17	RMS-4029
CIRCUIT BREAKER, CB17	RMS-4030
CIRCUIT BREAKER, CB19	RMS-4031
CIRCUIT BREAKER, CB19	RMS-4032
CIRCUIT BREAKER, CB19	RMS-4033
RELAY, K1	RMS-4034
RELAY, K1	RMS-4035
RELAY, K1	RMS-4036
RELAY, K2	RMS-4037
RELAY, K2 RELAY, K2	RMS-4038
FUSE, F26	RMS-4039
FUSE, F26 FUSE, F27	RMS-4040
·	RMS-4041
REMOTE POWER CONTROLLER, RPC 27 REMOTE POWER CONTROLLER, RPC 26	RMS-4042
+=====================================	RMS-4043

TABLE V-A IOA WORKSHEET NUMBERS (Concluded)	(2)
REMOTE POWER CONTROLLER, RPC 4 REMOTE POWER CONTROLLER, RPC 31 REMOTE POWER CONTROLLER, RPC 30 Remote Manipulator Arm Components (05-61A) REMOTE POWER CONTROLLER, RPC 28 REMOTE POWER CONTROLLER, RPC 29 SWITCH, S4 RESISTOR, A2R2, A2R3, A3R2, A3R3 CIRCUIT BREAKER, 1 PH 3A RMS, BACKUP POWER REMOTE POWER CONTROLLER, RPC 4 REMOTE POWER CONTROLLER, RPC 4 REMOTE POWER CONTROLLER, RPC 26, 27, 28, 29 REMOTE POWER CONTROLLER, RPC 30, RPC 31	RMS-4044 RMS-4045 RMS-4046 ID NUMBER RMS-4047 RMS-4048 RMS-4049X RMS-4050X RMS-4051X RMS-4051X RMS-4052X RMS-4053X RMS-4054X
TABLE V-B IOA WORKSHEET NUMBERS	(1)
Manipulator Deploy Control Components (05-6IB)	ID Number
SWITCH, S1 SWITCH, S2 SWITCH, S2 SWITCH, S5 SWITCH, S5 SWITCH, S5 SWITCH, S2 FUSE, F6 FUSE, F5 FUSE, F10 HYBRID RELAY, K72 HYBRID RELAY, K72 HYBRID RELAY, K49 HYBRID RELAY, K49 HYBRID RELAY, K60 HYBRID RELAY, K60 HYBRID RELAY, K51 HYBRID RELAY, K51 HYBRID RELAY, K51 HYBRID RELAY, K22 HYBRID RELAY, K22 HYBRID RELAY, K22 HYBRID RELAY, K62 HYBRID RELAY, K62 HYBRID RELAY, K62 HYBRID RELAY, K64 HYBRID RELAY, K64 HYBRID RELAY, K24 HYBRID RELAY, K24 HYBRID RELAY, K24 HYBRID RELAY, K24	RMS-4101 RMS-4102 RMS-4103 RMS-4104 RMS-4105 RMS-4106 RMS-4107 RMS-4108 RMS-4108 RMS-4108 RMS-4108 RMS-4108 RMS-4109 RMS-4110 RMS-4111 RMS-4112 RMS-4113 RMS-4114 RMS-4115 RMS-4116 RMS-4117 RMS-4117 RMS-4118 RMS-4119 RMS-4120 RMS-4121 RMS-4121 RMS-4122 RMS-4123 RMS-4124 RMS-4125 RMS-4126 RMS-4127

+	
TABLE V-B IOA WORKSHEET NUMBERS (Cont'd)	(2)
Manipulator Deploy Control Components (05-6IB)	ID Number
HYBRID RELAY, K50	RMS-4128
HYBRID DRIVERS, AR9, 11	RMS-4129
HYBRID DRIVERS, AR9, 11	RMS-4130
HYBRID DRIVERS, AR13, 15	RMS-4131
HYBRID DRIVERS, AR13, 15	RMS-4132
HYBRID DRIVERS, AR8, 10	RMS-4133
HYBRID DRIVERS, AR8, 10	RMS-4134
HYBRID DRIVERS, AR12, 14	RMS-4135
HYBRID DRIVERS, AR12, 14	RMS-4136
HYBRID DRIVERS, AR14, 18	RMS-4137
HYBRID DRIVERS, AR14, 18	RMS-4138
HYBRID DRIVERS, AR6, 8	RMS-4139
HYBRID DRIVERS, AR6, 8	RMS-4140
HYBRID DRIVERS, AR12, 16	RMS-4141
HYBRID DRIVERS, AR12, 16	RMS-4142
HYBRID DRIVERS, AR2, 4	RMS-4143
HYBRID DRIVERS, AR2, 4	RMS-4144
CIRCUIT BREAKER, CB2	RMS-4145
CIRCUIT BREAKER, CB2	RMS-4146
CIRCUIT BREAKER, CB7	RMS-4147
CIRCUIT BREAKER, CB7	RMS-4148
CIRCUIT BREAKER, CB12 CIRCUIT BREAKER, CB12	RMS-4149 RMS-4150
CIRCUIT BREAKER, CB12	RMS-4150 RMS-4151
CIRCUIT BREAKER, CB3	RMS-4151
CIRCUIT BREAKER, CB9	RMS-4152
CIRCUIT BREAKER, CB9	RMS-4154
CIRCUIT BREAKER, CB13	RMS-4155
CIRCUIT BREAKER, CB13	RMS-4156
SWITCH, S2	RMS-4157
SWITCH, S2	RMS-4158
SWITCH, S3	RMS-4159
SWITCH, S3	RMS-4160
SWITCH, S7	RMS-4161
SWITCH, S7	RMS-4162
SWITCH, S9	RMS-4163
SWITCH, S9	RMS-4164
SWITCH, S12	RMS-4165
SWITCH, S12	RMS-4166
SWITCH, S13	RMS-4167
SWITCH, S13	RMS-4168
RESISTOR, R2	RMS-4169
RESISTOR, R3	RMS-4170
RESISTOR, R7	RMS-4171
RESISTOR, R9	RMS-4172
RESISTOR, R12	RMS-4173
RESISTOR, R13	RMS-4174

Manipulator Deploy Control Components (05-61B)   ID Number			
SWITCH, S2 TABLE V-C IOA WORKSHEET NUMBERS  (1)  Manipulator Latch Control Components (05-6IC) ID Number  HYBRID RELAY, K20 HYBRID RELAY, K20 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY,	†	TABLE V-B IOA WORKSHEET NUMBERS (Concluded)	(3)
SWITCH, S2 SWITCH, SE	!	Manipulator Deploy Control Components (05-6IB)	ID Number
Manipulator Latch Control Components (05-6IC) ID Number HYBRID RELAY, K20 HYBRID RELAY, K20 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY, K64 FUSE, F4  RMS-4208 RMS-4211		SWITCH, S2	RMS-4175X RMS-4176X RMS-4177X RMS-4178X RMS-4179X RMS-4180X RMS-4181X RMS-4182X
Manipulator Latch Control Components (05-6IC) ID Number HYBRID RELAY, K20 HYBRID RELAY, K20 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY, K64 FUSE, F4  RMS-4208 RMS-4211	4	TABLE V-C TOA WORKSHEET NUMBERS	(1)
HYBRID RELAY, K20 HYBRID RELAY, K20 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY, K64 HYBRID RELAY, K64 FUSE, F4  RMS-4208 RMS-4211	1		
HYBRID RELAY, K20 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY, K64 HYBRID RELAY, K64 FUSE, F4  RMS-4202 RMS-4203 RMS-4206 RMS-4207 RMS-4208 RMS-4211		Manipulator Latch Control Components (05-6IC)	ID Number
RESISTOR, R27 RESISTOR, R67 RESISTOR, R28 RESISTOR, R63 RESISTOR, R63 RESISTOR, R14 RESISTOR, R25 RESISTOR, R32 RESISTOR, R32 RESISTOR, R33 HYBRID DRIVER, AR4 HYBRID DRIVER, AR5 HYBRID DRIVER, AR13 HYBRID DRIVER, AR13 FUSE, AR4F1 FUSE, AR10F1 FUSE, AR13F1 FUSE, AR13F1 FUSE, AR13F1 HYBRID RELAY, K55  RMS-4218 RMS-4217 RMS-4218 RMS-4218 RMS-4218 RMS-4221 RMS-4221 RMS-4221 RMS-4220 RMS-4221 RMS-4223 RMS-4223 RMS-4223 RMS-4224 RMS-4225 RMS-4226 RMS-4226 RMS-4227 RMS-4226 RMS-4227 RMS-4228 RMS-4230 RMS-4230 RMS-4231 RMS-4231 RMS-4231 RMS-4233 RMS-4234 RMS-4234	4	HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K52 HYBRID RELAY, K8 HYBRID RELAY, K8 HYBRID RELAY, K64 HYBRID RELAY, K64 HYBRID RELAY, K64 FUSE, F6 RESISTOR, R27 RESISTOR, R27 RESISTOR, R63 RESISTOR, R28 RESISTOR, R2 RESISTOR, R2 RESISTOR, R2 RESISTOR, R3 RESISTOR, R3 RESISTOR, R3 HYBRID DRIVER, AR4 HYBRID DRIVER, AR4 HYBRID DRIVER, AR10 HYBRID DRIVER, AR10 HYBRID DRIVER, AR5 HYBRID DRIVER, AR5 HYBRID DRIVER, AR5 HYBRID DRIVER, AR13	RMS-4202 RMS-4203 RMS-4204 RMS-4205 RMS-4206 RMS-4207 RMS-4208 RMS-4211 RMS-4212 RMS-4212 RMS-4215 RMS-4216 RMS-4216 RMS-4217 RMS-4218 RMS-4219 RMS-4220 RMS-4220 RMS-4220 RMS-4221 RMS-4222 RMS-4222 RMS-4223 RMS-4224 RMS-4225 RMS-4226 RMS-4227 RMS-4228 RMS-4227 RMS-4228 RMS-4227 RMS-4230 RMS-4231 RMS-4231 RMS-4232 RMS-4233 RMS-4233 RMS-4233 RMS-4234 RMS-4235
HYBRID RELAY, K55 HYBRID RELAY, K69  RMS-4236 RMS-4237		HYBRID RELAY, K55 HYBRID RELAY, K69	1

+		· (01-3)	
+	V-C IOA WORKSHEET NUMBERS		(2)
Manipulator La	atch Control Components	(05-6IC)	ID Number
HYBRID RELAY,			RMS-4238
HYBRID RELAY,			RMS-4239
HYBRID RELAY,			RMS-4240
HYBRID RELAY,			RMS-4241
HYBRID RELAY,	K57		RMS-4242
FUSE, F2			RMS-4245
FUSE, F4			RMS-4246
RESISTOR, R29			RMS-4247
RESISTOR, R65			RMS-4248
RESISTOR, R28			RMS-4249
RESISTOR, R61			RMS-4250
RESISTOR, R1			RMS-4251
RESISTOR, R11			RMS-4252
RESISTOR, R25			RMS-4253
RESISTOR, R14			RMS-4254
RESISTOR, R26			RMS-4255
RESISTOR, R15			RMS-4256
HYBRID RELAY,			RMS-4257
HYBRID RELAY,			RMS-4258
HYBRID RELAY,			RMS-4259
HYBRID RELAY,			RMS-4260
HYBRID RELAY,			RMS-4261
HYBRID RELAY,			RMS-4262
HYBRID RELAY,			RMS-4263
HYBRID RELAY,	K76		RMS-4264
FUSE, F8			RMS-4267
FUSE, F2			RMS-4268
RESISTOR, R61			RMS-4269
RESISTOR, R41			RMS-4270
RESISTOR, R62			RMS-4271
RESISTOR, R40			RMS-4272
RESISTOR, R14			RMS-4273
RESISTOR, R2			RMS-4274
RESISTOR, R59			RMS-4275
RESISTOR, R31			RMS-4276
RESISTOR, R60			RMS-4277
RESISTOR, R33	WE A		RMS-4278
HYBRID RELAY,			RMS-4279
HYBRID RELAY,			RMS-4280
HYBRID RELAY,			RMS-4281
HYBRID RELAY,			RMS-4282
HYBRID RELAY,			RMS-4283
HYBRID RELAY,			RMS-4284
HYBRID RELAY,			RMS-4285
HYBRID RELAY,	V44		RMS-4286
FUSE, F7			RMS-4289
FUSE, F3			RMS-4290
RESISTOR, R68			RMS-4291
RESISTOR, R34			RMS-4292

TABLE V-C IOA WORKSHEET NUMBERS (Cont'd)	(3)
Manipulator Latch Control Components (05-6IC)	ID Number
RESISTOR, R64	RMS-4293
RESISTOR, R33	RMS-4294
RESISTOR, R12	RMS-4295
RESISTOR, R2	RMS-4296
RESISTOR, R35	RMS-4297
RESISTOR, R31	RMS-4298
RESISTOR, R34	RMS-4299
RESISTOR, R30	RMS-4300
HYBRID RELAY, K59	RMS-4301
HYBRID RELAY, K59	RMS-4302
HYBRID RELAY, K76	RMS-4303
HYBRID RELAY, K76	RMS-4304
HYBRID RELAY, K71	RMS-4305
HYBRID RELAY, K71	RMS-4306
HYBRID RELAY, K74	RMS-4307
HYBRID RELAY, K74	RMS-4308
FUSE, F5,	RMS-4311
FUSE, F9	RMS-4312
RESISTOR, R66	RMS-4313
RESISTOR, R66	RMS-4314
RESISTOR, R62	RMS-4315
RESISTOR, R67	RMS-4316
RESISTOR, R10	RMS-4317
RESISTOR, R2	RMS-4318
RESISTOR, R16	RMS-4319
RESISTOR, R64	RMS-4320
RESISTOR, R17	RMS-4321
RESISTOR, R65	RMS-4322 RMS-4323
HYBRID RELAY, K24	1
HYBRID RELAY, K24	RMS-4324
HYBRID RELAY, K27	RMS-4325 RMS-4326
HYBRID RELAY, K27	RMS-4327
HYBRID RELAY, K12	RMS-4327
HYBRID RELAY, K12	RMS-4329
HYBRID RELAY, K29	RMS-4320
HYBRID RELAY, K29	RMS-4333
FUSE, 2 AMP, F3	RMS-4334
FUSE, 2 AMP, F3	RMS-4334
RESISTOR, R49	RMS-4336
RESISTOR, R22	RMS-4337
RESISTOR, R42	RMS-4338
RESISTOR, R23	RMS-4339
RESISTOR, R2	RMS-4340
RESISTOR, R3	RMS-4341
RESISTOR, R34	RMS-4342
RESISTOR, R33 RESISTOR, R36	RMS-4343
· ·	RMS-4344
RESISTOR, R31	

TABLE V-C IOA WORKSHEET NUMBERS (Concluded)	(4)
Manipulator Latch Control Components (05-6IC)	ID Number
FUSE, F3, F4 SWITCH, S6 LIMIT SWITCH, LATCHED & RELEASED LIMIT SWITCH, RELEASE LIMIT SWITCH, LATCH	RMS-4345X RMS-4346X RMS-4347X RMS-4348X RMS-4349X RMS-4350X RMS-4351X RMS-4351X RMS-4352X RMS-4353X RMS-4353X
TABLE V-D IOA WORKSHEET NUMBERS	(1)
Manip Arm Arm/Shldr Retn/Jett Components (05-6ID)	ID Number
RELAY, K44 RELAY, K76 RELAY, K57 RELAY, K80 RELAY, K77 RELAY, K11 RELAY, K68 RELAY, K58 RELAY, K78 RELAY, K78 RELAY, K78 RELAY, K23 RELAY, K17 SWITCH, S21 SWITCH, S21 SWITCH, S28 SWITCH, S28 SWITCH, S28 SWITCH, S25 SWITCH, S25 SWITCH, S32 SWITCH, S32 SWITCH, S32 SWITCH, S31 SWITCH, S31 SWITCH, S31 SWITCH, S23 SWITCH, S33 SWITCH, S30 SWITCH, S30	RMS-4209 RMS-4210 RMS-4243 RMS-4244 RMS-4265 RMS-4266 RMS-4287 RMS-4288 RMS-4309 RMS-4310 RMS-4331 RMS-4332 RMS-4301 RMS-4501 RMS-4502 RMS-4503 RMS-4504 RMS-4505 RMS-4506 RMS-4507 RMS-4506 RMS-4507 RMS-4508 RMS-4510 RMS-4511 RMS-4512 RMS-4512 RMS-4513 RMS-4515 RMS-4516

TABLE V-D IOA WORKSHEET NUMBERS (Concluded)	(3)
Manip Arm Arm/Shldr Retn/Jett Components (05-6ID)	ID Number
PIC 18 PIC 7, 18 PIC 7, 18 PIC 9 PIC 9 PIC 20 PIC 20 PIC 20 PIC 11 PIC 11 PIC 11 PIC 12 PIC 12 PIC 12 PIC 12 PIC 11, 22 PIC 11, 22	RMS-4565 RMS-4566 RMS-4567 RMS-4568 RMS-4569 RMS-4570 RMS-4571 RMS-4572 RMS-4573 RMS-4574 RMS-4574 RMS-4576 RMS-4576 RMS-4577 RMS-4577

### 4.1 Assessment Results - EPD&C/RMS Remote Manipulator Arm Subsystem (05-6IA)

The IOA analysis of the EPD&C/RMS Remote Manipulator Arm Subsystem generated forty-eight (48) failure mode worksheets and identified thirty-one (31) Potential Critical Items before starting the assessment process. Of the forty-eight (48) IOA FMEAs, three (3) were Criticality 1/1, fifteen (15) were Criticality 2/1R and thirteen (13) were Criticality 2/2. NASA analysis consisted of twenty- five (25) FMEAs and fifteen (15) CIL items. Of the fifteen (15) CIL items, six (6) Criticality 1/1 and nine (9) were Criticality 2/1R. component, the function it performs and the failure modes identified were re-evaluated and the assessment was performed by comparison of the IOA FMEA/CILs to the NASA Post 51L FMEA/CILs. The IOA assessment recommends fifty-four (54) IOA FMEAs be established with four (4) having Criticality 1/1, sixteen (16) having Criticality 2/1R, thirteen having Criticality 2/2, one (1) having Criticality 3/1R, eight (8) having Criticality 3/2R, and three (3) having Criticality 3/3. The assessment identified thirty-three (33) Potential Critical Items with four (4) having Criticality 1/1, sixteen having Criticality 2/1R, and thirteen (13) having Criticality 2/2. The assessment identified five (5) issue items. IOA recommends that two (2) NASA FMEAs be generated with Criticality 2/1R, one (1) NASA FMEA be generated with Criticality 2/2, and one (1) NASA FMEA Criticality be upgraded to 2/1R from 3/1R and one upgraded from Criticality 2/2 to 2/1R.

## 4.2 Assessment Results - EPD&C/RMS Manipulator Deploy Control Subsystem (05-61B)

The IOA analysis of the EPD&C/RMS Manipulator Deploy Control Subsystem generated seventy-four (74) failure mode worksheets and identified fourteen (14) Potential Critical Items before starting the assessment process. Of the seventy-four (74) IOA FMEAs, ten (10) were Criticality 1/1, two (2) were Criticality 2/1R, two (2) were Criticality 2/2, thirty (30) were Criticality 3/2R, and thirty (30) were Criticality 3/3. The NASA analysis consisted of eighteen (18) FMEAs and seven (7) CIL items. Of the seven (7) CIL items, five (5) were Criticality 1/1, and two (2) were Each component, the function it performs and Criticality 2/1R. the failure modes identified were re-evaluated and the assessment was performed by comparison of the IOA FMEA/CILs to the NASA Post 51L FMEA/CILs. The IOA assessment results is eighty (80) IOA FMEAs with ten (10) having Criticality 1/1, one (1) having Criticality 2/1R, two (2) having Criticality 2/2, four (4) having Criticality 3/1R, thirty-one (31) having Criticality 3/2R, and The assessment thirty-two (32) having Criticality 3/3. identified thirteen (13) Potential Critical Items with ten (10) having Criticality 1/1, one (1) having Criticality 2/1R, and two (2) having Criticality 2/2. The assessment identified no (0) issue items.

## 4.3 Assessment Results - EPD&C/RMS Manipulator Latch Control Subsystem (05-6IC)

The IOA analysis of the EPD&C/RMS Manipulator Latch Control Subsystem generated one hundred and forty-four (144) failure mode worksheets and identified no (0) Potential Critical Items before starting the assessment process. Of the one hundred and fiftyfour (144) IOA FMEAs, seventy (70) were Criticality 3/2R and seventy-four (74) were Criticality 3/3. The NASA analysis All of consisted of eighteen (18) FMEAs and seven (7) CIL items. the seven (7) CIL items, five (5) were Criticality 2/1R. component, the function it performs and the failure modes identified were re-evaluated and the assessment was performed by comparison of the IOA FMEA/CILs to the NASA Post 51L FMEA/CILs. The IOA assessment results is one hundred and forty-three (143) IOA FMEAs with none (0) having Criticality 1/1, six (6 having Criticality 2/1R, none () having Criticality 2/2, four (4) having Criticality 3/1R, fifty-eight (58) having Criticality 3/2R, and seventy-five (75) having Criticality 3/3. The assessment identified six (6) Potential Critical Items having Criticality 2/1R. The assessment identified no (0) issue items.

4.4 Assessment Results - EPD&C/RMS Shoulder/Retention Arm and Jettison Subsystem (05-6ID)

The IOA analysis of the EPD&C/RMS Shoulder/Retention Arm and Jettison Subsystem generated seventy-nine (79) failure mode worksheets and identified seventy-two (72) Potential Critical Items before starting the assessment process. Of the seventynine (79) IOA FMEAs, ten (10) were Criticality 1/1, sixty-two were Criticality 2/1R, one (1) was Criticality 3/2R, and six (6) were Criticality 3/3. The NASA analysis consisted of seventy-one (71) FMEAs, thirty-seven (37 of which were CIL items. Of the thirty-seven (37) CIL items, twelve (12) were Criticality 1/1 and twenty-five (25) were Criticality 2/1R. Each component, the function it performs and the failure modes identified were re-evaluated and the assessment was performed by comparison of the IOA FMEA/CILs to the NASA Post 51L FMEA/CILs. The IOA assessment results is ninety-one (91) IOA FMEAs with ten (10) having Criticality 1/1, sixty-two (62) having Criticality 2/1R, none () having Criticality 2/2, none () having Criticality 3/1R, thirteen (13) having Criticality 3/2R, and six (6) having The assessment identified ten (10) Potential Criticality 3/3. Critical Items having Criticality 1/1 and sixty-two having Criticality 2/1R. The assessment identified no (0) issue items.

#### 5.0 REFERENCES

Reference documentation available from NASA and Rockwell International Space Division was used in the analysis. The documentation used in the analysis includes the following:

- NSTS 22206, Instructions for Preparation of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL), Oct. 10, 1986
- JSC-11174, Space Shuttle Systems Handbook, Rev. C, DCN-5, Sep. 13, 1985
- 3. VS72-956099, Rockwell International Electrical Schematics, Remote Manipulator System
- 4. Rockwell, International Space Division Reliability Desk Instruction No. 100-2G, Flight Hardware Failure Mode Effects Analysis (FMEA) & Critical Items List (CIL), January 31, 1984.

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#### APPENDIX A

#### ACRONYMS and ABBREVIATIONS

AC - Alternating Current AOA - Abort Once Around

AMP - Ampere

ATO - Abort To Orbit

CB - Circuit Breaker
CIL - Critical Items List

CKT - Circuit
CUR - Current

DC - Direct Current

EPD&C - Electrical Power Distribution and Control

FMC - Forward Motor Controller

FMEA - Failure Mode Effects Analysis

FPC - Forward Power Controller

FUNC - Functional FWD - Forward

GUILL - Guillotine

HDW - Hardware

HERM - Hermetically

HW/F - Hardware/Functional

HZ - Hertz (cycles per second)

IOA - Independent Orbiter Analysis

JETT - Jettison

LIM - Limiting

MCIU - Manipulator Controller Interface Unit MDAC - McDonnell Douglas Astronautics Company

MDM - Multiplexer/Demultiplexer

MFR - Manned Foot Restraint
MMC - Mid Motor Controller
MN - Main 28 VDC Power Bus
MPC - Mid Power Controller

NASA - National Aeronautics and Space Administration

NSTS - National Space Transportation System

N/A - Not Applicable

OA - Operational Aft
OF - Operational Forward

#### ACRONYMS and ABBREVIATIONS (Cont'd)

- Pass

PBM Payload Bay MechanicalPower Controller AssemblyPotential Critical Item PCA PCI

PH - Phase

- Pyro Initiator Controller PIC

- Position POS PYRO - Pyrotechnic

RPC - Remote Power Controller
RTLS - Return To Town - Remote Manipulator System

STBD - Starboard

TAL - TransAtlantic Abort Landing

VAC - Volts Alternating Current

- Volts Direct Current VDC

1-PH - Single Phase 3-PH - Three Phase

#### APPENDIX B

# DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

- B.1 Definitions
  B.2 Project Level Ground Rules and Assumptions
  B.3 Subsystem-Specific Ground Rules and Assumptions

# APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

#### B.1 Definitions

Definitions contained in <u>NSTS 22206</u>, <u>Instructions For Preparation of FMEA/CIL</u>, 10 October 1986, were used with the following amplifications and additions.

#### **INTACT ABORT DEFINITIONS:**

RTLS - begins at transition to OPS 6 and ends at transition
to OPS 9, post-flight

<u>TAL</u> - begins at declaration of the abort and ends at transition to OPS 9, post-flight

AOA - begins at declaration of the abort and ends at transition to OPS 9, post-flight

<u>ATO</u> - begins at declaration of the abort and ends at transition to OPS 9, post-flight

<u>CREDIBLE (CAUSE)</u> - an event that can be predicted or expected in anticipated operational environmental conditions. Excludes an event where multiple failures must first occur to result in environmental extremes

<u>CONTINGENCY CREW PROCEDURES</u> - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

<u>EARLY MISSION TERMINATION</u> - termination of onorbit phase prior to planned end of mission

EFFECTS/RATIONALE - description of the case which generated the highest criticality

HIGHEST CRITICALITY - the highest functional criticality
determined in the phase-by-phase analysis

<u>MAJOR MODE (MM)</u> - major sub-mode of software operational sequence (OPS)

<u>MC</u> - Memory Configuration of Primary Avionics Software System (PASS)

MISSION - assigned performance of a specific Orbiter flight with payload/objective accomplishments including orbit phasing and altitude (excludes secondary payloads such as GAS cans, middeck P/L, etc.)

<u>MULTIPLE ORDER FAILURE</u> - describes the failure due to a single cause or event of all units which perform a necessary (critical) function

OFF-NOMINAL CREW PROCEDURES - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

OPS - software operational sequence

<u>PRIMARY MISSION OBJECTIVES</u> - worst case primary mission objectives are equal to mission objectives

#### PHASE DEFINITIONS:

PRELAUNCH PHASE - begins at launch count-down Orbiter
power-up and ends at moding to OPS Major Mode 102 (liftoff)

<u>LIFTOFF MISSION PHASE</u> - begins at SRB ignition (MM 102) and ends at transition out of OPS 1 (Synonymous with ASCENT)

ONORBIT PHASE - begins at transition to OPS 2 or OPS 8 and ends at transition out of OPS 2 or OPS 8

DEORBIT PHASE - begins at transition to OPS Major Mode
301 and ends at first main landing gear touchdown

<u>LANDING/SAFING PHASE</u> - begins at first main gear touchdown and ends with the completion of post-landing safing operations

# APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.2 IOA Project Level Ground Rules and Assumptions

The philosophy embodied in NSTS 22206, Instructions for Preparation of FMEA/CIL, 10 October 1986, was employed with the following amplifications and additions.

1. The operational flight software is an accurate implementation of the Flight System Software Requirements (FSSRs).

RATIONALE: Software verification is out-of-scope of this task.

2. After liftoff, any parameter which is monitored by system management (SM) or which drives any part of the Caution and Warning System (C&W) will support passage of Redundancy Screen B for its corresponding hardware item.

RATIONALE: Analysis of on-board parameter availability and/or the actual monitoring by the crew is beyond the scope of this task.

3. Any data employed with flight software is assumed to be functional for the specific vehicle and specific mission being flown.

RATIONALE: Mission data verification is out-of-scope of this task.

4. All hardware (including firmware) is manufactured and assembled to the design specifications/drawings.

RATIONALE: Acceptance and verification testing is designed to detect and identify problems before the item is approved for use.

5. All Flight Data File crew procedures will be assumed performed as written, and will not include human error in their performance.

RATIONALE: Failures caused by human operational error are out-of-scope of this task.

6. All hardware analyses will, as a minimum, be performed at the level of analysis existent within NASA/Prime Contractor Orbiter FMEA/CILs, and will be permitted to go to greater hardware detail levels but not lesser.

RATIONALE: Comparison of IOA analysis results with other analyses requires that both analyses be performed to a comparable level of detail.

7. Verification that a telemetry parameter is actually monitored during AOS by ground-based personnel is not required.

RATIONALE: Analysis of mission-dependent telemetry availability and/or the actual monitoring of applicable data by ground-based personnel is beyond the scope of this task.

8. The determination of criticalities per phase is based on the worst case effect of a failure for the phase being analyzed. The failure can occur in the phase being analyzed or in any previous phase, whichever produces the worst case effects for the phase of interest.

RATIONALE: Assigning phase criticalities ensures a thorough and complete analysis.

9. Analysis of wire harnesses, cables, and electrical connectors to determine if FMEAs are warranted will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

10. Analysis of welds or brazed joints that cannot be inspected will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

11. Emergency system or hardware will include burst discs and will exclude the EMU Secondary Oxygen Pack (SOP), pressure relief valves and the landing gear pyrotechnics.

RATIONALE: Clarify definition of emergency systems to ensure consistency throughout IOA project.

# APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.3 RMS-Specific Ground Rules and Assumptions

The IOA analysis was performed to the component or assembly level. The analysis considered the worst case effects of the hardware or functional failure on the subsystem, mission, and crew and vehicle safety.

1. A RMS mission is considered to be uncradling, grappling a berthed payload, unberthing it, deploying it and then retrieving a rotating payload, berthing it and performing MFR operations. Any failure that prevents the completion of any of these tasks is loss of mission (i.e. loss of manual augmented modes).

RATIONALE: This is the most demanding nominal RMS mission possible. This causes the worst case criticalities for certain failures because they will prevent the completion of this mission. If the mission was simpler, many failures would be a lower criticality.

 Consistency checking and safing is not considered redundancy for failures that cause uncommanded motion.

RATIONALE: The consistency check and safing are not redundant for the hardware that when fails causes uncommanded motion. They are also only designed to stop the RMS in 2 feet, which may not prevent collision.

3. A Criticality 1 failure is considered to be any failure that causes uncommanded motion, uncommanded release, uncommanded derigidization, or loss of capability to move a joint or any number of joints. It also includes the loss of the ability to release a payload, and the payload hanging up in the snares.

RATIONALE: Uncommanded motion in its worst case can cause the loss of vehicle if the arm or payload struck a window or damaged the payload bay doors so they could not close. Uncommanded release could cause the payload to hit the Orbiter, uncommanded derigidization or a payload hanging up in the snares can cause the unrestrained payload on the end effector to swing into the Orbiter. The loss of the ability to move a joint or release a payload would mean the RMS could not be cradled which would prevent the doors from closing.

4. The loss of primary modes will cause loss of mission (Criticality 2) but backup is considered redundancy for release of the payload and cradling the RMS for some failures. Therefore, loss of primary modes is a criticality 2 as long as backup is available.

RATIONALE: Without primary modes the RMS mission cannot be accomplished. Backup mode does not provide enough redundancy to accomplish the task mentioned in rule 1. Backup does provide some redundancy for failures that cause loss of payload release or loss of joint drive. Therefore, the failures that backup provides redundancy for will be classified as loss of mission.

5. For ascent, entry and aborts, the RMS is assumed to be cradled, latched, and unpowered. Only failures that can occur while the RMS is in this mode are considered for those flight phases.

RATIONALE: The RMS is designed for use while onorbit.

During ascent and entry the RMS is latched and unpowered. No consideration will be given to failures unless they have an effect during ascent and entry.

6. Failure modes are assumed to occur during two arm operations. If a failure can effect two arms, then the worst case result of that effect will determine the criticality.

RATIONALE: The Orbiter is capable of supporting dual arm operation. If this configuration proves to be the worst case for a particular failure, then that will drive the criticality.

7. Failures of wire harnesses and bundles (structural failures, wire to wire shorts, incorrect attachment) are not considered. Failures of a single wire are covered by considering loss of input or output from a component.

RATIONALE: The failure of wire harnesses and bundles are not being considered because of the magnitude of possible failures.

# APPENDIX C DETAILED ASSESSMENT

This section contains the IOA assessment worksheets generated during the assessment of this subsystem. The information on these worksheets facilitates the comparison of the NASA FMEA/CIL (Pre and Post 51-L) to the IOA detailed analysis worksheets included in Appendix E. Each of these worksheets identifies the NASA FMEA being assessed, corresponding MDAC Analysis Worksheet ID (Appendix E), hardware item, criticality, redundancy screens, and recommendations. For each failure mode, the highest assessed hardware and functional criticality is compared and discrepancies noted as "N" in the compare row under the column where the discrepancy occurred.

# LEGEND FOR IOA ASSESSMENT WORKSHEETS

#### Hardware Criticalities:

1 = Loss of life or vehicle

2 = Loss of mission or next failure of any redundant item
 (like or unlike) could cause loss of life/vehicle

3 = All others

#### Functional Criticalities:

1R = Redundant hardware items (like or unlike) all of which,
 if failed, could cause loss of life or vehicle

2R = Redundant hardware items (like or unlike) all of which,

if failed, could cause loss of mission

#### Redundancy Screens A, B and C:

P = Passed Screen

F = Failed Screen

NA = Not Applicable

#### NASA Data:

Baseline = NASA FMEA/CIL

New = Baseline with Proposed Post 51-L Changes

#### CIL Item :

X = Included in CIL

#### Compare Row:

N = Non compare for that column (deviation)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/01/88 RMS-4001 05-6IA-202	8-1X	NAS: BA:	A DATA: SELINE [ ] NEW [ X ]	
SUBSYSTEM:					
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
FT.TCF	LITY RE			CIL ITEM	
HDW/FU	INC A	В	С		
NASA [ / IOA [ 2 /2	] [	] [	] [ ]	[ ] * [ X ]	
COMPARE [ N /N	] [	] [	] [ ]	[ N ]	
RECOMMENDATIONS:	(If diff	erent fro	om NASA)		
[ 2 /2	] [	] [	] [ ]	[ X ] (ADD/DELETE)	
* CIL RETENTION	RATIONALE:	(If appli	ADE	QUATE [ ] QUATE [ ]	
(FAIL OPEN, SHOPEN) OF 1/1 (REFER 40 CONTACTS FAIL CI (REFER 4006). CONTACT SHORT, ST THE FAILURE MODE AND THE FIRST FA SWITCH TO PROVIDE	RTED BETWEEN  102). 2) 0  LOSED, PREMA  3) 05-61A-2  SHORT TO CAS  2 IDENTIFIED  ALLURE WOULD  DE BOTH PRIM  A NASA FMEA	POLES, S 5-61A-202 TURE CLOS 028-9 (PO E) WITH A IN THIS CAUSE LO ARY AND I BE GENER	COMPONENT: SHORTED TO (28-6 (ONE OF E) WITH A (20 COLOR) A CRIT OF 1, FMEA IS A (20 COLOR) BACKUP POWER	1) 05-6IA-2028-5 GROUND) WITH A CRI R MORE SETS OF CRIT OF 2/1R SHORT, CONTACT TO /1 (REFER 4002). CREDIBLE FAILURE ION (A SINGLE R). IOA HESE COMBINED IOA	r

ASSESSME ASSESSME NASA FME	NT :	rn•		4002	28-5					DATA: LINE NEW	[	-	
SUBSYSTE MDAC ID:			RMS/1 4002 SWITE										
LEAD ANA	LYS	r:	ROBI	NSON									
ASSESSME	ENT:												
		rical FLIGH	ITY T	F	EDUN	DANCY	SCR	EENS			CIL		
			NC	A		В		С	1				
NASA IOA	[	1 /1 1 /1	]	[	] ]	] [	]	[	]		х ] х ]	] ;	*
COMPARE	[	/	1	[	]	ſ	]	[	3		[	]	
RECOMMEN	TADI	ions:	(I	f dif	fere	nt fr	om N	ASA)					
	[	/	1	[	]	[	]	[	]	(A	[ DD/I		ľE)
* CIL RI		TION	RATIO	NALE:	(If	appl	icab	ole) A INA	DEQI	JATE JATE	[	]	
REMARKS:		WITH	I NASA	FME?	4. N	o iss	UE.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/01/88 RMS-4003 05-6IA-2028-1X	NASA DATA BASELINE NEW						
SUBSYSTEM:	RMS/EPD&C 4003 SWITCH, S4							
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
	ITY REDUNDAN	CY SCREENS	CIL					
FLIGHT HDW/FUN	NC A	в с	ITEM					
NASA [ / IOA [ 2 /2	] [ ] [	] [ ] [	[ x ] *					
COMPARE [ N /N	] [ ] [	1 [ 1	[ N ]					
RECOMMENDATIONS:	(If different	from NASA)						
[ 2 /2	] [ ] [	] [ ] (Al	[ X ] DD/DELETE)					
* CIL RETENTION F	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE						
REMARKS: THERE ARE THREE NASA FMEAS FOR THIS COMPONENT: 1) 05-61A-2028-5 (FAIL OPEN, SHORTED BETWEEN POLES, SHORTED TO GROUND) WITH A CRIT OF 1/1 (REFER 4002). 2) 05-61A-2028-6 (ONE OR MORE SETS OF CONTACTS FAIL CLOSED, PREMATURE CLOSE) WITH A CRIT OF 2/1R (REFER 4006). 3) 05-61A-2028-9 (POLE TO POLE SHORT, CONTACT TO CONTACT SHORT, SHORT TO CASE) WITH A CRIT OF 1/1 (REFER 4002). THE FAILURE MODE IDENTIFIED IN THIS FMEA IS A CREDIBLE FAILURE AND THE FIRST FAILURE WOULD CAUSE LOSS OF MISSION (A SINGLE SWITCH TO PROVIDE BOTH PRIMARY AND BACKUP POWER). IOA RECOMMENDS THAT A NASA FMEA BE GENERATED FOR THESE COMBINED IOA FAILURE MODES(4001, 4003 AND 4004) WITH THIS CRITICALITY. NO ISSUE ON THIS IOA FMEA, REFER TO 4001 FOR RESOLUTION.								

ASSESSME ASSESSME NASA FME	NT NT A	DZ II #:	ATE: O:	2/01/ RMS-4 05-6I	88 004 A-20	28-1	x			SA D		[			
SUBSYSTE MDAC ID:	M:				PD&C	:									
LEAD ANA	LYS	ST	:	ROBIN	SON										
ASSESSME	NT:	:													
	CR:				R	EDUN	DANCY	SCI	REENS			CI IT			
	I		LIGH W/FU	NC	A		В		С			11	EM		
NASA IOA	[	2	/2	]	[	]	[	]	[	]		[ [	X	] * ]	t
COMPARE	[	N	/N	]	[	]	[	]	[	]		[	N	]	
RECOMMEN	DA!	ri(	ons:	(If	dif	fere	nt fr	om 1	NASA)						
	[	2	/2	]	[	]	[	]	[	]	(A)			] LET	ſE)
* CIL RE	TE	NT:	ION	RATION	IALE:	(If	appl	ical	AΓ	EQUA EQUA	TE TE	[		]	
REMARKS: THERE AR (FAIL OP	E 'EN	TH.	REE SHOR	NASA F	MEAS TWEE	FOR N PO	THIS	COI SHOI	MPONENT	: 1 GRC	) O	5-6 ) W	AI II	.–20 'H <i>I</i>	)28-5 A CRI

THERE ARE THREE NASA FMEAS FOR THIS COMPONENT: 1) 05-61A-2028-5 (FAIL OPEN, SHORTED BETWEEN POLES, SHORTED TO GROUND) WITH A CRIT OF 1/1 (REFER 4002). 2) 05-61A-2028-6 (ONE OR MORE SETS OF CONTACTS FAIL CLOSED, PREMATURE CLOSE) WITH A CRIT OF 2/1R (REFER 4006). 3) 05-61A-2028-9 (POLE TO POLE SHORT, CONTACT TO CONTACT SHORT, SHORT TO CASE) WITH A CRIT OF 1/1 (REFER 4002). THE FAILURE MODE IDENTIFIED IN THIS FMEA IS A CREDIBLE FAILURE AND THE FIRST FAILURE WOULD CAUSE LOSS OF MISSION (A SINGLE SWITCH TO PROVIDE BOTH PRIMARY AND BACKUP POWER). IOA RECOMMENDS THAT A NASA FMEA BE GENERATED FOR THESE COMBINED IOA FAILURE MODES (4001, 4003 AND 4004) WITH THIS CRITICALITY. NO ISSUE ON THIS IOA FMEA, REFER TO 4001 FOR RESOLUTION.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/01/88 RMS-4005 05-6IA-2	028-2X		NASA DATA: BASELINE NEW	: [ ] [ x ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4005 SWITCH,				
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
FLIGH			Y SCREEN	ıs	CIL ITEM
HDW/FU	NC .	A	В	C	
NASA [ / IOA [ 2 /1R	] [	P ] [	] [ NA] [	NA]	[ ] * [ X ]
COMPARE [ N /N	] [	и] [	и][и	[и]	[ N ]
RECOMMENDATIONS:	(If di	fferent f	rom NASA	7)	
[ 2 /1R	] [	) [	) [	] (AI	[ X ] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If app	licable)		
REMARKS:			נ	ADEQUATE NADEQUATE	
THERE ARE THREE					
(FAIL OPEN, SHORE OF 1/1 (REFER 40					
CONTACTS FAIL CL					
(REFER 4006). 3 CONTACT SHORT, S	HORT TO C	-2028-9 ( ASE) WITH	A CRIT	OF 1/1 (RE)	FER 4002).
THE FAILURE MODE	IDENTIFI:	ED IN THI	S FMEA I	IS A CREDIBI	LE FAILURE
AND THE FIRST FA SWITCH TO PROVID					SINGLE IOA
RECOMMENDS THAT	A NASA FM	EA BE GEN	ERATED W	ITH THIS FA	

AND CRIT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4006			BASELINE NEW	[ x ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4006 SWITCH,				
LEAD ANALYST:	ROBINSON	ī			
ASSESSMENT:					
CRITICAL: FLIGHT		REDUNDANC	Y SCREEN	rs .	CIL ITEM
HDW/FU		A	В	С	
NASA [ 2 /1R IOA [ 3 /3	] [	P ] [	F ] [	P ]	[ X ] *
COMPARE [ N /N	] [	и ] [	и ] [	N ]	[и]
RECOMMENDATIONS:	(If di	ifferent f	rom NASA	7)	
[ /	] [	] [	] [		[ DD/DELETE)
* CIL RETENTION	RATIONALE	E: (If app		ADEQUATE NADEQUATE	[ ]
REMARKS: IOA CONCURS WITH FMEA.	NASA FME	EA. UPGRA	ADE IOA (	CRIT AND SCI	REENS OF IOA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4007	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4007 SWITCH, S1		
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
CRITICAL FLIGH		NCY SCREENS	CIL ITEM
HDW/FU	NC A	ВС	
NASA [ 2 /1R IOA [ 2 /2	] [ P ] ]	[F] [P] [] []	[ X ] *
COMPARE [ /N	] [ N ]	[и] [и]	[ ]
RECOMMENDATIONS:	(If different	from NASA)	
[ /	] [ ]	[ ] [ ] (AD	[ ] D/DELETE)
* CIL RETENTION	RATIONALE: (If a	pplicable) ADEQUATE INADEQUATE	[ ]
PREMATURE OPEN,	SHORTS TO CASE A	-5, FAILURE MODES OF PPEAR TO BE CREDIBLE. WITH THE NASA FMEA	FAILS OPEN

ASSESSMEI ASSESSMEI NASA FME	I TN	D:	1/12/ RMS-4 05-6]	800	29-5			N		DATA LINE NEW	[		
SUBSYSTEMDAC ID:			RMS/E 4008 SWITC										
LEAD ANA	LYSI	r:	ROBIN	NOSI									
ASSESSME	NT:												
•		TICAL TLIGH	ITY	R	EDUN	DANCY	SCR	EENS			CI		
	-		NC	A		В	3	C	2			J. 1	
NASA IOA	[ ]	l /1 l /1	]	[	]	[	]	]	]		[ ]	x ] x ]	*
COMPARE	ĺ	/	]	[	]	[	]	[	]		[	]	
RECOMMEN	DAT]	cons:	(Ii	f dif	fere	nt fr	om N	ASA)					
	[	/	] .	[	]	[	]	[	]	(A)		DELI	ETE)
* CIL RE	TENT	rion	RATIO	NALE:	(If	appl	icab	P		JATE JATE	[	]	
REMARKS: NONE									·		-	-	

ASSESSME ASSESSME NASA FME	NT I		RMS-	2/88 -4009 5IA-20	29-5				ASA DAT BASELIN NE		x ]	
SUBSYSTE MDAC ID:	M:		4009	'EPD&C ) ICH, S								
LEAD ANA	LYST	:	ROB	INSON								
ASSESSME	NT:											
		ICAL LIGH	ITY T	R	EDUN	DANCY	SCF	REENS			IL PEM	
	HD	W/FU	NC	A		В		C				
NASA IOA	[ 1 [ 1	/1 /1	]	]	]	[	]	[ [	]	]	х ј х ј	*
COMPARE	[	/	]	[	]	[	]	[	]	[	]	
RECOMMEN	DATI	ons:	()	f dif	fere	nt fr	om N	NASA)				
	[ .	/	]	[	3	[	]	[	]	[ (ADD/	DEL	ETE
* CIL RE	TENT	ION	RATIO	ONALE:	(If	appl	icak	A	DEQUATE DEQUATE		]	
<b>REMARKS</b> •										_	_	

NONE

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/12/88 RMS-401 05-6IA-	0 2026 <b>-</b> 1		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4010 SWITCH,	&C			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
		REDUND	ANCY SCRE	ens	CIL ITEM
FLIG HDW/F	UNC	A	В	С	11211
NASA [ 2 /1 IOA [ 2 /1	R ] [ R ] [	P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [	N ]	[ N ]	[ ]	[ ]
RECOMMENDATIONS	: (If d	ifferen	t from NA	SA)	
[ /	] [	]	[ ]	[ ]	[ ] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	[ ]
REMARKS: CORRECT IOA SCE 4014, S10 IN RM IOA RECOMMENDS FMEA. IOA CONC FMEA.	S-4011. ONE FMEA	ALL 4 F FOR FOU	MEAS ARE R IDENTIC	IN RMS-4010 ESSENTIALLY	), S9 IN RMS- IDENTICAL. AS IN NASA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4011 05-6IA-2026-1	NASA DATA BASELINE NEW						
SUBSYSTEM:	RMS/EPD&C 4011 SWITCH, S10							
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL								
FLIGH HDW/FU		в с	ITEM					
NASA [ 2 /1R IOA [ 2 /1R	] [P] [ ] []	F ] [ P ] P ] [ P ]	[ X ] * [ X ]					
COMPARE [ /	] [N][	и] [ ]	[ ]					
RECOMMENDATIONS:	(If different f	rom NASA)						
[ /	] [ ] [	] [ ] (A	[ ] DD/DELETE)					
* CIL RETENTION	RATIONALE: (If app	licable) ADEQUATE						
		INADEQUATE						
RMS-4014, S10 IN IDENTICAL. IOA	RMS-4011. ALL 4 RECOMMENDS ONE FME	MS-4013, S8 IN RMS FMEAS ARE ESSENTIA A FOR FOUR IDENTIC SCREENS SHOULD BE	LLY AL SWITCHES					

FMEA.

ASSESSME ASSESSME NASA FME	ENT	II	<b>)</b> :	1/ RM 05	L/12/88 NASA DATA: RMS-4012 BASELINE [ ] D5-6IA-2026-2 NEW [ X ]															
SUBSYSTE MDAC ID:				RM 40	S/EF 12	D8	iC		S10											
LEAD ANA	<b>LY</b> S	ST:	•	RO	BINS	103	1													
ASSESSMI	ENT:	:																		
	CRI		ICAL:				RI	EDUN	DANC	Y	SCI	REEN	3			CI		Į.		
	F		/FU				A			В			С							
NASA IOA	[	3 2	/1R /2	]		[	P	]	] [	F	]	[	P	]		[	X X	]	*	
COMPARE	ĺ	N	/N	]		[	N	]	[	N	]	[	N	]		[		]		
RECOMME	NDA:	rI	ons:		(If	<b>d</b> :	if	fere	nt i	fr	om 1	NASA	)							
	[		/	3		[		]	[		]	C		]	(AI			] ELI	ETE	)
* CIL R	ETE	NT:	ION	RAT	CION	ΑL	E:	(If	apı	ol.	ica		A.	DEQUA DEQUA				]		
REMARKS UPGRADE STATES TEMPERA WOULD A THEREFO AND 401	CR THA' TUR PPE RE	T ES	CONT SUF	INI FIC FI	JOUS CIEN' ATLU	LY TL RE	Р У У М	OWEI TO I ODE	RING PREVI	H EN CR	EAT T R EDI	COMP ING MS J BLE	ON EL OI (A	ENTS EMENT NT MC LBEIT	NASA S CO VEMI	A A DUI ENI LIF	E) E)	ΓΑ.	IT )	EASE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4013 05-6IA-2026-1	/12/88 NASA DATA: MS-4013 BASELINE [ 5 5-6IA-2026-1 NEW [ X						
SUBSYSTEM: MDAC ID:								
LEAD ANALYST:	ROBINSON	ROBINSON						
ASSESSMENT:								
CRITICALI FLIGHT		ANCY SCREEN	is	CIL ITEM				
HDW/FUN		В	С	<b>1111</b>				
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ ]	[F] [P]	P ] P ]	[ X ] *				
COMPARE [ /	] [ N ]	[ N ]	]	[ ]				
RECOMMENDATIONS:	(If different	from NASA	.)					
[ /	] [ ]	[ ] [		[ ] DD/DELETE)				
* CIL RETENTION R	ATIONALE: (If a							
		I	ADEQUATE NADEQUATE	[ ]				
REMARKS: CORRECT IOA SCREE! 4010, S9 IN RMS-40 ESSENTIALLY IDENT! IDENTICAL SWITCHES SCREENS SHOULD BE	014, S10 IN RMS ICAL. IOA RECO S AS IN POST FM	FMEAS S7 I 5-4011. AL MMENDS ONE MEA. IOA C	N RMS-4013, L 4 FMEAS A FMEA FOR B	, S8 IN RMS- ARE FOUR				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4014 05-6IA-2	RMS-4014 BASELINE 05-6IA-2026-1 NEW							
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4014 SWITCH,								
LEAD ANALYST:	ROBINSO	N							
ASSESSMENT:	ASSESSMENT:								
CRITICA: FLIG	LITY	REDUNDAN	1CY	SCREENS	1	CIL ITEM			
	INC	A	В		С				
NASA [ 2 /1] IOA [ 2 /1]	R ] [	P ] [	[ F [ P	] [	P ] P ]	[ X ]	<b>*</b>		
COMPARE [ /	] [	и ] (	[ N	] [	]	[ ]			
RECOMMENDATIONS	(If d	ifferent	fro	m NASA)					
[ /	] [	]	[	] [	] (Al	[ DD/DEI			
* CIL RETENTION	RATIONAL	E: (If a	ppli	cable) IN	ADEQUATE		} 		
REMARKS: NO ISSUE. CORRECT IOA SCREEN, COMBINE IOA FMEAS S7 IN RMS-4013, S8 IN RMS-4010, S9 IN RMS-4014, S10 IN RMS-4011. ALL 4 FMEAS ARE ESSENTIALLY IDENTICAL. IOA RECOMMENDS ONE FMEA FOR FOUR									

IDENTICAL SWITCHES AS IN POST FMEA.

REMARKS:  DOWNGRADE IOA CRIT, CHANGE IOA SCREENS, COMBINE IOA FMEAS POST ANALYSIS STATES THAT CONTINUOUSLY POWERING HEATING ELEMENTS COULD INCREASE TEMPERATURES SUFFICIENTLY TO PREVENT RMS JOINT MOVEMENTS. IT WOULD APPEAR THE FAILURE MODE IS CREDIBLE (ALBEIT UNLIKELY) THEREFORE IOA CONCURS WITH NASA FMEA. RECOMMEND COMBINING RMS-4012 AND RMS-4015 INTO RMS-4012 WITH THE APPROPRIATE SCREENS.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4016 05-6IA-200	[ x	]			
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4016 FUSE, F1					
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICAL FLIGH	ITY RE	DUNDANCY	SCREENS		CIL	[
_	NC A	В	С			
NASA [ 1 /1 IOA [ 2 /2	] [	] [	] [	]	[ X	] <b>*</b> ]
COMPARE [ N /N	] [	] [	] [	]	[	]
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)			
[ /	] [	] [	] [	] (AI	[ DD/DE	] :LETE)
* CIL RETENTION	RATIONALE:	(If appl:	A.	DEQUATE DEQUATE		]
REMARKS: COMBINE IOA FAIL REDUNDANT TO RMS REDUNDANCY SCREE	-4017. REI	FERENCE N	E. THIS :	FMEA APPI PAR 2.3	EARS .4B I	FOR BLANK ISE OPEN

AT A MORE CRITICAL TIME WITH A CRIT 2/1R, AND THIS FAILURE DIFFERS ONLY IN THAT IT OCCURS AT A LESS CRITICAL TIME, IOA

RECOMMENDS IT BE ABSORBED INTO RMS-4017.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4017 05-6IA-2003-1	: [							
SUBSYSTEM:	RMS/EPD&C 4017 FUSE, F1	RMS/EPD&C 4017							
LEAD ANALYST:	ROBINSON	OBINSON							
ASSESSMENT:									
CRITICAI FLIGH		INCY SCREENS	CIL ITEM						
	NC A	ВС							
NASA [ 1 /1 IOA [ 2 /1F	] [ ] [ P ]	[ ] [ ] [ MA ]	[ X ] *						
COMPARE [ N /N	] [N]	[ N ] [ N ]	[ ]						
RECOMMENDATIONS:	(If different	from NASA)							
[ /	] [ ]	[ ] [ ] (A)	[ ] DD/DELETE)						
* CIL RETENTION	RATIONALE: (If a	pplicable)							
		ADEQUATE INADEQUATE							
REMARKS: NO ISSUE. IOA CONCURS THAT THIS FAILURE COULD CAUSE UNCOMMANDED MOTION WHICH IS CONSIDERED TO BE POSSIBLY CATASTROPHIC. UPGRADE IOA CRIT.									

ASSESSME ASSESSME NASA FME	NT			1/12/8 RMS-40 05-6I		02-1						ASA DATA BASELINE NEW	[		]	
SUBSYSTE MDAC ID: ITEM:				4018	MS/EPD&C 1018 USE, F2											
LEAD ANA	LY:	ST	:	ROBINS	DBINSON											
ASSESSME	NT	:														
	CR:		ICAL LIGH	ITY T	R	EDUN	DANC	CY	SC	REENS				IL FEN	1	
	1	HD	W/FU	NC	A			В			С					
NASA IOA	[	3 2	/1R /2	]	[ F	]	[ [	P	]	[ [	P	]	[ [	x	]	*
COMPARE	[	N	/N	]	[ N	]	[	N	]	[	N	1	[	N	]	
RECOMMEN	DA'	ΓI	ons:	(If	dif	fere	nt i	fro	om	NASA)	)					
	[		/	1	נ	]	[		]	[		] (A		/DI		ETE)
* CIL RE		NT	ION :	RATION	ALE:	(If	apı	pl:	ica			DEQUATE DEQUATE			]	
REMARKS: COMBINE FMEA BE	IO.							SUI	Ξ.	IOA	R	ECOMMEND	S	TH	ΑT	THIS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-401 05-6IA-	9 2002 <b>-</b> 1	NASA DATA BASELINE NEW						
SUBSYSTEM:	RMS/EPD 4019								
LEAD ANALYST:	ROBINSO	N							
ASSESSMENT:									
CRITICAI FLIGH	CIL ITEM								
	NC	A B	С	TIEM					
NASA [ 3 /1F IOA [ 2 /1F	] [	P ] [ P ] P ] [ NA]	[ P ] [ NA]	[					
COMPARE [ N /	] [	] [и]	[ N ]	[ N ]					
RECOMMENDATIONS:	(If d	ifferent from NAS	SA)						
[ 2 /1R	] [	P ] [ NA]		[ X ] DD/DELETE)					
* CIL RETENTION	RATIONAL	E: (If applicable	e) ADEQUATE INADEQUATE	[ ]					
REMARKS:			INADEQUATE	[ ]					
	T. CORRE	CT IOA SCREENS, C	OMBINE TOA	TMEAS.					
REDUNDANCY SCREE	N B IS N	OT APPLICABLE FOR	STANDBY REI	OUNDANT					
ITEMS. CHANGE I	OA SCREE	N C TO "P". IOA	SCREENS SHOU	JLD BE 1 -					
N/A - P. BACKUP	POWER W	OULD ONLY BE USED	AFTER PRIMA	ARY FAILURE.					
TOSS OF BACKUP P	OWER UND	ER SUCH CONDITION OT BE SAFELY STOW	S COULD CAUS	SE LOSS OF					
RECOMMENDS THAT	RMS-4018	BE COMBINED WITH	THIS FMEA V	SONED. IOA VITH CHANGED					

SCREENS.

ASSESSMEN ASSESSMEN NASA FMEA	1T   1T   1	DA IE :	ATE:	1/12/ RMS-4 05-61	1/12/88 NASA DATA: RMS-4020 BASELINE 05-6IA-2076-1 NEW						[		]					
SUBSYSTEM MDAC ID: ITEM:				RMS/E 4020 RESIS			A3R2											
LEAD ANAI	LYS	T:	:	ROBIN	SO	N												
ASSESSMEN	T:																	
CRITICALITY REDUNDANCY SCREENS FLIGHT								IL PEN										
				1C		A			В			С		-		•		
NASA IOA	[	2 3	/1R /2R	]	[ [	P	]	[	F P	]	]	P P	]	[	X	]	*	
COMPARE	[	N	/N	]	[	N	]	[	N	]	[		]	[	N	]		
RECOMMENI	TAC	IC	ons:	(If	đ	if	feren	t :	fro	om N.	ASA)	)						
	[		/	]	[		3	[		3	[		] (AI		/DI		ETE	)
* CIL RET	ren	TI	ON I	RATION	IAL	E:	(If	ap)	pl:	icab		IA IAV	DEQUATE DEQUATE	[		]		
REMARKS: COMBINE COMBINES REALISTIC AND 4023	ST C A	AF SS	RBOAI SESSI	RD AND MENT,	P IO	OR:	CONCU	PO RS	NEI T	NTS CO	SCRI ON ! MBII	EEI PHI NE	NS. NASA E SAME FI IOA FMEA	A ME	FMI	Ξ <b>Α</b>	FOR L,	4022

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		: [ ] [ X ]						
	RMS/EPD&C 4021 RESISTOR, A3F							
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICAL FLIGH		CIL ITEM						
HDW/FU		В	С					
NASA [ 2 /1R IOA [ 3 /2R	] [ P ] ] [ ]	[ F ] [ [ P ] [	P ] P ]	[ X ] *				
COMPARE [ N /N	] [N]	[ N ]	]	[ N ]				
RECOMMENDATIONS:	(If differe	ent from NASA)						
[ /	1 [ 1	[ ] [		[ ] DD/DELETE)				
* CIL RETENTION	RATIONALE: (If		A DECITA ME	r 1				
		IN	ADEQUATE ADEQUATE	[ ]				
REMARKS: COMBINE IOA FMEAS AND UPGRADE CRIT AND SCREENS. NASA FMEA COMBINES STARBOARD AND PORT COMPONENTS ON THE SAME FMEA. FOR REALISTIC ASSESSMENT, IOA CONCURS TO COMBINE IOA FMEAS 4021, 4022 AND 4023 AND UPGRADE CRITS AND SCREENS ACCORDINGLY.								

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:								[						
SUBSYSTEM: MDAC ID: ITEM:	4022	RMS/EPD&C 4022 RESISTOR, A2R2												
LEAD ANALYST:	ROBINSO	ROBINSON												
ASSESSMENT:														
CRITICA FLIG	LITY	RI	EDUNDA	NC	CY	SCREE	NS	3			IL FEI			
	UNC	A			В			С						
NASA [ 2 /1 IOA [ 3 /2	R ] [ R ] [	P	]	[	F P	]	[	P P	]	[	X	]	*	
COMPARE [ N /N	] [	N	1	[	N	]	[		1	[	N	]		
RECOMMENDATIONS	: (If d	lif	ferent	: 1	fro	om NAS	SA)	)						
[ /	] [	•	]	[		]	[		] (A		/D			E)
* CIL RETENTION	RATIONAL	LE:	(If a	ıpj	pl:	icable		AI NAI	DEQUATE DEQUATE	[		]		
REMARKS: COMBINE IOA FMEAS AND UPGRADE CRIT AND SCREENS. NASA FMEA COMBINES STARBOARD AND PORT COMPONENTS ON THE SAME FMEA. FOR REALISTIC ASSESSMENT, IOA CONCURS TO COMBINE IOA FMEAS 4021, 4022 AND 4023 AND UPGRADE CRITS AND SCREENS ACCORDINGLY.														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4023 05-6IA-2076-1	[ x ]							
SUBSYSTEM:									
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
CRITICAL: FLIGHT	CIL								
HDW/FU		С	ITEM						
NASA [ 2 /1R IOA [ 3 /2R	] [ P ] [ F ] ] [ P ]	[ P ] [ P ]	[ X ] *						
COMPARE [ N /N	] [N] [N]	[ ]	[ N ]						
RECOMMENDATIONS:	(If different from	NASA)							
[ /	] [ ] [ ]		[ ] DD/DELETE)						
* CIL RETENTION F	RATIONALE: (If applica	·							
		ADEQUATE INADEQUATE	[ ]						
REMARKS:  COMBINE IOA FMEAS AND UPGRADE CRIT AND SCREENS. NASA FMEA  COMBINES STARBOARD AND PORT COMPONENTS ON THE SAME FMEA. FOR  REALISTIC ASSESSMENT, IOA CONCURS TO COMBINE IOA FMEAS 4021, 4022  AND 4023 AND UPGRADE CRITS AND SCREENS ACCORDINGLY.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4024	78-1		NASA BASE	DATA: LINE [ NEW [ X			
	RMS/EPD&C 4024 RESISTOR,							
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICAL: FLIGH	ITY R	EDUNDANG	CY SCRE	ENS		CIL ITEM		
HDW/FU			В	С				
NASA [ 3 /3 IOA [ 3 /3	] [	] [	]	[ ]	[	] *		
COMPARE [ /	] [	] [	]	[ ]	[	1		
RECOMMENDATIONS:	(If dif	ferent :	from NA	ΔSA)				
[ /	] [	] [	]	[ ]	[ (ADD/D			
* CIL RETENTION	RATIONALE:	(If ap	plicabl	le) ADEQU	ATE [	]		
				INADEQU	ATE [	j		
REMARKS: COMBINE IOA COMPRESISTORS LISTED A1R2. IOA FMEA RESISTOR A3R1. RESISTOR A2R1. WITH NASA FMEA.	IN REF DE 4025 FAILS IOA FMEA 4	SIGNATO RESISTO 027 FAI	R. IOA OR A1R2 LS	A FMEA 40 2. IOA F	24 FAILS MEA 4026	RESISTOR FAILS		

ASSESSME ASSESSME NASA FME	NT C NT I A #:	ATE:	1/12/88 NASA DATA: RMS-4025 BASELINE [ ] 05-6IA-2078-1 NEW [ X ]										
SUBSYSTEMDAC ID:			4025	RMS/EPD&C 4025 RESISTOR, A1R2									
LEAD ANA	LYSI	:	ROBINSON										
ASSESSME	NT:												
CRITICALITY REDUNDANCY FLIGHT							SCR	REENS			CIL ITEM		
			NC	1	A	Е	3	C	;			-	
NASA IOA	[ 3	3 /3	]	[	] ]	[	]	[	]		[	] *	•
COMPARE	[	/	]	[	]	[	]	[	]		[	]	
RECOMMEN	DATI	ons:	(If	di	ffere	nt fr	om N	IASA)					
	[	/	]	[	3	[	]	[	]	(A	[ DD/D:		E)
* CIL RE	TENI	NOI	RATION	ALE	: (If	appl	icak	ole)					
2242244									DEQU DEQU	ATE	[	]	
REMARKS: COMBINE RESISTOR A1R2. I RESISTOR RESISTOR WITH NAS	S LI OA F A3F A2F	STED MEA R1.	IN RE 4025 F	F D AIL EA	ESIGN S RES 4027	ATOR. ISTOF FAILS	IC AlF	A FME R2. I	EA 40 OA F	24 F. MEA	AILS 4026	RES FAI	ISTOR LS
MITTU MAD	u Ll	٠ تمنا											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4026			NASA DATA: BASELINE [ ] NEW [ X ]						
	RMS/EPD& 4026 RESISTOR									
LEAD ANALYST:	ROBINSON									
ASSESSMENT:										
CRITICAL FLIGH	ITY T	REDUNDA	NCY	SCREEN	រន	CIL ITEN	CIL ITEM			
HDW/FU		A	В		С		-			
NASA [ 3 /3 IOA [ 3 /3	] [	]	] [	] [	]	[ [	] * ]			
COMPARE [ /	] [	]	[	] [	1	[	]			
RECOMMENDATIONS:	(If di	fferent	fro	om NASA	<b>A)</b>					
[ /	] [	3	Ć	) (	[ ] (2	[ ADD/DI	] ELETE)			
* CIL RETENTION	RATIONALE	: (If a	ppl		ADEQUATE		]			
REMARKS: COMBINE IOA COMP RESISTORS LISTED A1R2. IOA FMEA RESISTOR A3R1. RESISTOR A2R1. WITH NASA FMEA.	IN REF D 4025 FAIL IOA FMEA	ESIGNAT S RESIS 4027 FA	OR. TOR ILS	IOA 1	FMEA 4024 I IOA FMEA	FAILS 4026	RESISTOR FAILS			

ASSESSME ASSESSME NASA FME	ENT	ID	<b>):</b>	1/12/88 NASA DATA: RMS-4027 BASELINE [ ] 05-6IA-2078-1 NEW [ X ]										
SUBSYSTE MDAC ID:				40	RMS/EPD&C 4027 RESISTOR, A2R1									
LEAD ANA	LYS	T:	;	RO	ROBINSON									
ASSESSME	ENT:													
CRITICALITY REDUNDANCY FLIGHT												ď		
			/FU			A		F	3	C	!		ITE	1
NASA IOA	[	3 3	/3 /3	]		[	]	[ [	]	[	]		[	] * ]
COMPARE	[		/	]		[	]	[	]	[	]		[	]
RECOMMEN	IDAT	'IC	ons:		(If	dif	fere	ent fr	om j	NASA)				
	[		/	]		[ `	)	[	]	[	]	(A)	[ DD/D1	] ELETE)
* CIL RE	ETEN	נידו	ON	RAT:	ION	ALE:	<b>(I</b> 1	f appl	icak					
												JATE JATE		] ]
REMARKS: COMBINE RESISTOR A1R2. I RESISTOR RESISTOR WITH NAS	IOA RS L IOA R A3 R A2	FM R1	STED MEA L.	IN 402 IOA	REI 5 FI FMI	F DE AILS EA 4	SIGN RES	NATOR. SISTOR FAILS	IC Alf	OA FME R2. I	A 40 OA E	24 F	AILS 4026	RESISTOR FAILS

ASSESSME ASSESSME NASA FME	ΝT	IL	):	RMS-	2/88 -4028 5IA-200	06-1			N	IASA BASE		[		]	
SUBSYSTEMDAC ID:				4028	/EPD&C B CUIT BI	REAK	ŒR, C	B17							
LEAD ANA	LYS	T:		ROB	INSON										
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	FLIGHT HDW/FUNC A B C													•	
NASA IOA	[	2	/2 /2	]	[	]	[	]	[	]		[	X X	]	*
COMPARE	[		/	]	[	]	[	1	[	]		[		]	
RECOMMEN	DAI	ric	ons:	(:	If dif	fere	ent fr	om N	IASA)						
	[		/	]	[	]	[	]	[	3	(A		'DI		ETE)
* CIL RE	TEI	T	ON	RATI	ONALE:	(If	f appl	icab	1	ADEQU ADEQU		[		]	
REMARKS: NO ISSUE FAILURE					IOA FM S-2029		. IOA	REC	COMME	NDS C	OMBI	NIN	īG	TH	iis

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4029 05-6IA-20	06-1		NASA DATA BASELINE NEW	: : [ ] : [ x ]							
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4029 CIRCUIT B		CB17									
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
	NC A		В	С	ITEM							
NASA [ 2 /2 IOA [ 2 /1R	] [	] [	] [ NA] [	[ ] [ NA]	[ X ] * [ X ]							
COMPARE [ /N	] [	] [	N J	[ N ]	[ ]							
RECOMMENDATIONS:	(If dif	ferent	from NASA	<b>A</b> )								
[ 2 /1R	[ 1	] [	N/]	[ P ] (A	[ ] .DD/DELETE)							
* CIL RETENTION	RATIONALE:	(If ap	-	ADEQUATE	[ ]							
REMARKS:												
GENERATE NASA FM OF PRIMARY AC PW	EA, CHANGE R WITH ARM	IOA SC	REENS, CO WOULD CA	OMBINE IOA AUSE LOSS O	FMEAS. LOSS							
MODE OF OPERATIO	N, THUS LO	SS OF M	ISSION.	ANY SUBSEQ	UENT FAILURE							
IN THE BACKUP SY THE ARM COULD NO												
SCREENS SHOULD R				120000	OR REDORDANCE							

ASSESSME ASSESSME NASA FME	NT	ID:	1/12/ RMS-4 05-6]	1030	06-2			N	IASA D BASEI		[	; ]
SUBSYSTE MDAC ID:	M:		RMS/I 4030 CIRCU	EPD&C JIT BI	REAK	ER, C	B17					
LEAD ANA	LYS	T:	ROBII	NOON								
ASSESSME	NT:											
		TICAL FLIGH		RI	EDUN	DANCY	SCR	EENS			CII	
		DW/FU		A		E	3	C	2			
NASA IOA	[	3 /3 3 /3	]	]	]	[	]	[	]		[	] * ]
COMPARE	[	/	]	[	]	[	]	[	]		[	]
RECOMMEN	DAT	ions:	(I:	f dif	fere	nt fr	om N	IASA)				
	[	/	]	[	]	[	]	[	]	(A)	[ DD/I	] DELETE)
* CIL RE	TEN	TION	RATIO	NALE:	(If	appl	.icab	7	ADEQU <i>I</i> ADEQU <i>I</i>		[	]
REMARKS:									-		-	•

NONE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA BASELINE NEW	-								
MDAC ID:	RMS/EPD&C 4031 CIRCUIT BREAKE											
LEAD ANALYST:	AD ANALYST: ROBINSON											
ASSESSMENT:												
	TY REDUND	ANCY SCRE	ENS	CIL ITEM								
	FLIGHT HDW/FUNC A B C											
NASA [ 3 /3 IOA [ 2 /2	] [ ]	[ ]	[									
COMPARE [ N /N	] [ ]	[ ]	[ ]	[ N ]								
RECOMMENDATIONS:	(If differen	t from NA	SA)									
[ /	] [ ]	[ ]		[ DD/DELETE)								
* CIL RETENTION R	RATIONALE: (If	applicabl	e) ADEQUATE INADEQUATE	[ ]								
COMBINE IOA FAILU RMS-4032 (HAS HIG		OMMEND CO	MBINING THIS	MODE WITH								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		2 2001–1		NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD&				
LEAD ANALYST:	ROBINSON	1			
ASSESSMENT:					
CRITICAL: FLIGHT	r	REDUNDANC		s c	CIL ITEM
HDW/FU	NC	A	В	C	
NASA [ 3 /3 IOA [ 2 /1R	] [	P ] [	] [ NA] [	] NA]	[ ] * [ X ]
COMPARE [ N /N	] [	и ] [	и ] [	N ]	[ N ]
RECOMMENDATIONS:	(If di	ifferent 1	from NASA	)	
[ 2 /1R	] [	1 ] [	N/] [	P ] (AI	[ ] DD/DELETE)
* CIL RETENTION 1	RATIONALE	E: (If app		ADEQUATE NADEQUATE	[ ]
REMARKS: IOA C SCREEN SHO	ULD BE "I	e" AND IO	A SCREEN	B IS NOT A	PPLICABLE

SINCE BACKUP AC POWER IS STANDBY REDUNDANT PER NSTS 22206. SCREENS SHOULD BE 1 - N/A - P. RECOMMEND THIS FMEA BE COMBINED WITH RMS-4031. RECOMMEND THE NASA FMEA BE CHANGED TO AGREE WITH THE

MODIFICATIONS TO THIS FMEA. LOSS OF BACKUP AC POWER WHILE IN OPERATION COULD CAUSE LOSS OF VEHICLE/CREW IF ARM COULD NOT BE SAFELY STOWED OR JETTISONED.

ASSESSME ASSESSME NASA FME	NT I	D:	RMS-	-	01-1			]	NASA DAT BASELIN NI	1E [	x ]	
SUBSYSTE MDAC ID:	M:		4033			ER, C	B19					
LEAD ANA	LYST	<b>:</b>	ROBI	NSON								
ASSESSME	NT:											
			ITY	R	EDUN	DANCY	SCRE	ENS		CI:		
		'LIGH W/FU	NC	A		В		•	С	II.	5M	
NASA IOA	[ 3 [ 3	/3	]	[ [	]	[	]	[	]	[	] * ]	r
COMPARE	[	/	]	[	]	[	]	[	]	[	]	
RECOMMEN	DATI	ons:	(I	f dif	fere	nt fr	om NA	SA)				
	[	/	]	[	)	[	]	[	]	[ (ADD/	] DELET	ĽΕ
* CIL RE	TENT	'ION	RATIO	NALE:	(If	appl	icabl	1	ADEQUATE ADEQUATE	_	]	
REMARKS:								7.17	UDEZONTI	- i	ı	

NO ISSUE.

ASSESSME ASSESSME NASA FME	NT I			/88 4034 SIA-21	26-1			N	IASA 1 BASE:	LINE	[	x ]	
SUBSYSTE MDAC ID:			4034	EPD&C									
LEAD ANA	LYST	:	ROBI	NSON									
ASSESSME	NT:												
			ITY	R	EDUN	DANCY	SCR	EENS			CI	L	
		LIGH W/FU		A		11	. EM						
NASA IOA	[ 1	/1 /2	]	[	]	[	]	[	]		] [	x ] x ]	*
COMPARE	[ N	/N	]	[	]	[	]	[	]		[	]	
RECOMMEN	DATI	ons:	(1	f dif	fere	nt fr	om N	ASA)					
	[	/	]	ĺ	]	[	]	[	]	(A		) DELE	TE)
* CIL RE	TENT	ION	RATIC	NALE:	(If	appl	icab	P	ADEQU.		]	]	
REMARKS:	FME	A 05	-6IA-	-2126-	·1 HA	s Boj	тн ка	AND	K2 W	ITH	FA]	LURE	MODE

THE NASA FMEA 05-61A-2126-1 HAS BOTH K1 AND K2 WITH FAILURE MODES FAIL OPEN', SHORT TO GROUND'. IOA FMEAS 4034 AND 4035 HAVE K1 FAILING OPEN AT DIFFERENT TIMES WITH CRITS 2/2 AND 2/1R RESPECTIVELY. IOA RECOMMENDS COMBINING THE FOUR IOA FMEAS 4034, 4035, 4037 AND 4038 INTO ONE FMEA WITH A 1/1 CRIT.

	: 1/12/88 RMS-4035 05-6IA-2			NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4035 RELAY, K				
LEAD ANALYST:	ROBINSON	Ī			
ASSESSMENT:					
CRITICA FLIC	HT	REDUNDANC	Y SCREEN	s c	CIL ITEM
·				_	
NASA [ 1 /] IOA [ 2 /]	] [ R ] [	P ] [	] [ NA] [	] NA]	[ X ] * [ X ]
COMPARE [ N /N	] [	и ј [	N ] [	n j	[ ]
RECOMMENDATIONS	: (If di	fferent f	rom NASA	)	
1	] [	] [	] [		[ ] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If app	•	ADEQUATE NADEQUATE	[ ]
REMARKS:			-		L J

THE NASA FMEA 05-61A-2126-1 HAS BOTH K1 AND K2 WITH FAILURE MODES `FAIL OPEN', `SHORT TO GROUND'. IOA FMEAS 4034 AND 4035 HAVE K1 FAILING OPEN AT DIFFERENT TIMES WITH CRITS 2/2 AND 2/1R RESPECTIVELY. IOA RECOMMENDS COMBINING THE FOUR IOA FMEAS 4034, 4035, 4037 AND 4038 INTO ONE FMEA WITH A 1/1 CRIT.

ASSESSMEN ASSESSMEN NASA FME	T I		2/12/9 RMS-40 05-61	36	6-2						ASA D BASEL		[	x	]		
SUBSYSTEM MDAC ID: ITEM:	<b>1:</b>		RMS/EF 4036 RELAY,														
LEAD ANA	LYST	:	ROBINS	ON	Ī												
ASSESSME	NT:																
(	F	ICAL	r			DUNDA	ANC	CY B	SCREE	ENS	c C			CI IT			
	HD	W/ FU	NC		A			D			C						
NASA IOA	[ 2 [ 3	/1R /3	]	]	P	]	[	F	]	[	P	]		[	X	] ;	ŧ
COMPARE	[ N	/N	]	ĺ	N	]	[	N	]	[	N	1		[	N	]	
RECOMMEN	DATI	ons:	(If	di	ff	erent	t 1	fro	om NAS	SA)	)						
	[	/	]	[		]	[		]	[		1	(AI	[ DD/	DE	] LE:	ΓE)
* CIL RE	TENT	ION I	RATION?	ALE	:	(If a	apı	pli	cable			DEQUA DEQUA		[		]	
REMARKS:	TO3	TORKTO B	OD TI	1.	73.5	אים גי	ת ים	0.5		-2.	124	5_2 U	ו פגו	a O™	H	K1	AND

UPGRADE IOA FMEA CRIT. NASA FMEA 05-61A-2126-2 HAS BOTH K1 AND K2 FAIL WITH INADVERTENT OUTPUT. IOA FMEAS 4036 AND 4039 HAVE K1 FAILING CLOSED. RECOMMEND COMBINING BOTH RELAYS ON 4036 WITH THE FAILURE MODES IN AGREEMENT WITH NASA FMEA/CIL.

ASSESSMENT ASSESSMENT NASA FMEA	26-1			<b>N</b> 2	ASA DATA BASELINE NEW	.:   [   [ X	]					
SUBSYSTEM: MDAC ID: ITEM:	:	RMS/EI 4037 RELAY,										
LEAD ANALY	YST:	ROBINS	ON									
ASSESSMENT	T:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
		NC	A		В		С					
NASA IOA	[ 1 /1 [ 2 /2	]	[ X [ X	]	*							
COMPARE	[ N /N	]	[	]	[	]	[	]	[	]		
RECOMMENDA	ATIONS:	(If	dif	feren	t fr	om NA	SA)					
J	[ /	1	[	]	[	]	[	] (2	[ \DD/D			
* CIL RET	ENTION	RATION	ALE:	(If	appl	icabl		DEQUATE DEOUATE	[	]		
ADEQUATE [ ] INADEQUATE [ ] REMARKS: THE NASA FMEA 05-61A-2126-1 HAS BOTH K1 AND K2 WITH FAILURE MODES 'FAIL OPEN', 'SHORT TO GROUND'. IOA FMEAS 4034 AND 4035 HAVE K1 FAILING OPEN AT DIFFERENT TIMES WITH CRITS 2/2 AND 2/1R RESPECTIVELY. IOA RECOMMENDS COMBINING THE FOUR IOA FMEAS 4034, 4035, 4037 AND 4038 INTO ONE FMEA WITH A 1/1 CRIT.												

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		26-1	1	NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTEM:	RMS/EPD&C 4038 RELAY, K2									
LEAD ANALYST:	ROBINSON									
ASSESSMENT:										
CRITICAL FLIGH	ITY R	EDUNDANCY	SCREENS		CIL	ſ				
	NC A	В	(	С		•				
NASA [ 1 /1 IOA [ 2 /1R	] [ P	] [ ] [ P	] [	] P ]	[ X	] *				
COMPARE [ N /N	] [ N	] [ N	] [1	N ]	[	]				
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)							
[ /	] [	] [	] [	] (AI	[ DD/DE	] ELETE)				
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE ADEQUATE	[	]				
REMARKS: THE NASA FMEA 05 'FAIL OPEN', 'SH FAILING OPEN AT	ORT TO GRO	UND'. IO	H K1 AND A FMEAS	K2 WITH 1	FAILU 1035	JRE MODES				

RESPECTIVELY. IOA RECOMMENDS COMBINING THE FOUR IOA FMEAS 4034, 4035, 4037 AND 4038 INTO ONE FMEA WITH A 1/1 CRIT.

ASSESSME ASSESSME NASA FME	NT NT A	D2 I1 #:	ATE: D:	2/ RM 05	MS-4039 5-6IA-2126-2												DATA LINE NEW	[		]		
SUBSYSTE MDAC ID: ITEM:				40	IS/E 39 LAY																	
LEAD ANA	LYS	ST	:	RC	BIN	SOI	N															
ASSESSMENT:																						
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM																						
	I						A				В				С			17	ľEi	4		
NASA IOA	[	2	/1R /3	]	C A B C ] [P] [F] [P] ] []										[	x	]	*				
COMPARE	C	N	/N	]		[	N	]		[	N	]		[	N	]		[	N	]		
RECOMMEN	DA!	ri	ons:		(If	<b>d</b> :	if	fer	ent	. 1	Erc	om.	NAS	A)								
	[		/	]		[		]		[		]		[		]	(A	[ DD,			ETE	)
* CIL RE	TEI	NT:	ION I	RAI	'ION	ΑL	E:	(I	fa	pp	pli	Lca	able	)								
														IN			ATE ATE	•		]		
REMARKS:																						
UPGRADE K2 FAIL FAILING FAILURE	WI:	TH OS	INAI ED.	DVE RE	RTE	NT MEI	OT DN	TT. CC	UT.	N)	IC NC	)A 3 1	FME BOTH	AS F	EI	1036 LAYS	AND	4(	39	<b>→</b> F	łAV	E K1
LUTIOUR	LIOI	اندر	7 T14	W.	ظند	انلت	. 1	44 ∓		715	101		LILLIA	/ ┕	. 4 1	<b>-</b> •						

ASSESSMEN ASSESSMEN NASA FMEA	II TI	<b>)</b> :	RMS-40	40		4-1					NASA DATA BASELINE NEW	[		]	
SUBSYSTEM MDAC ID: ITEM:	1:		RMS/EF 4040 FUSE,												
LEAD ANAI	LYST	:	ROBINS	ON	Ī										
ASSESSMEN	T:														
C		CAL	[TY		RE	DUNDA	/N(	CY	SCREE	ENS	5		IL PEM	ī	
					A			В			С			-	
NASA IOA	[ 1 [ 2	/1 /1R	]	[	P	]	[	NA	]	]	NA]	[	X X	] <b>*</b>	
COMPARE	[ N	/N	]	[	N	]	[	N	)	[	N ]	[		]	
RECOMMENI	OATIO	ons:	(If	di	.ff	erent	<b>.</b> 1	fro	om NAS	SA	)				
	[	/	1	[		]	[		]	[	] (A		/DI	] ELETE)	
* CIL RET	rent:	ION 1	RATIONA	LE	E:	(If a	apj	pli	cable		ADEQUATE NADEQUATE	[		]	

REMARKS:

COMBINE IOA FAIL MODES AND FMEAS AND UPGRADE CRIT. THE NASA FMEA 05-61A-2004-1 WHILE NOT ACTUALLY SPECIFYING F26) COVERS TWO FUSES F26 AND F27. THE LOCATION' TYPO NEEDS CORRECTING. RECOMMEND COMBINING RMS-4040 AND 4041 IN AGREEMENT WITH NASA FMEA FAILURE AND CRIT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/12/88 RMS-404: 05-6IA-		NASA DATA BASELINE NEW					
SUBSYSTEM:		041						
LEAD ANALYST:	ROBINSO	N						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIFLIGHT								
HDW/FU	NC	A	В	С				
NASA [ 1 /1 IOA [ 2 /1R	] [	P ]	[ ] [ NA]	[ NA]	[ X ] * [ X ]			
COMPARE [ N /N	] [	<b>n</b> ]	[ N ]	[ N ]	[ ]			
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)				
[ /	] [	1	[ ]	[ ] (A	[ ] .DD/DELETE)			
* CIL RETENTION	RATIONAL	E: (If a	applicable	ADEQUATE INADEQUATE	[ ]			
REMARKS:  COMBINE IOA FAIL MODES AND FMEAS, CHANGE IOA SCREEN C.  REDUNDANCY SCREEN B IS NOT APPLICABLE FOR STANDBY REDUNDANT  ITEMS. CHANGE IOA SCREEN C TO "1 - N/A - P. THE NASA FMEA 05-6IA-2004-1 WHILE NOT ACTUALLY SPECIFYING F26) COVERS TWO FUSES  (F26 AND								

COVERS TWO FUSES F26 AND F27. RECOMMEND COMBINING RMS-4040 AND

4041 IN AGREEMENT WITH NASA FMEA FAILURE AND CRIT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4042 05-6IA-2	2 2176-1	BASELINE NEW					
SUBSYSTEM:	4042	хC	NTROLLER,	RPC 27				
LEAD ANALYST:	ROBINSON	1						
ASSESSMENT:								
CRITICAL: FLIGHT		REDUNDA	NCY SCREE	15	CIL ITEM			
:	NC	A	В	С				
NASA [ 2 /1R IOA [ 3 /2R	] [	P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] * [ ]			
COMPARE [ N /N	] [	и ]	[ N ]	[ ]	[ N ]			
RECOMMENDATIONS:	(If d	ifferent	from NAS	A)				
[ /	] [	3	[ ]	[ ] (A)	[ ] DD/DELETE)			
* CIL RETENTION	RATIONAL	E: (If a		) ADEQUATE INADEQUATE	[ ]			
REMARKS: NASA FMEA 05-61A-2176-1 COMPONENTS RPC 26, 27, 28 & 29 ARE ANALYZED FOR FAILURE MODES 'FAIL OPEN' AND 'SHORTS TO GROUND'. IOA RECOMMENDS COMBINING IOA FMEAS 4042, 4043, 4047 AND 4049 TO AGREE WITH NASA CRIT AND SCREENS.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4043 05-6IA-2176-1	NASA DATA: BASELINE NEW							
SUBSYSTEM: MDAC ID: ITEM:	4043	OTE POWER CONTROLLER, RPC 26							
LEAD ANALYST:	ROBINSON								
ASSESSMENT:	ASSESSMENT:								
CRITICAL	CIL								
FLIGH HDW/FU	INC A	ВС	ITEM						
NASA [ 2 /1H IOA [ 3 /2H	R ] [ P ] R ] [ ]	[ F ] [ P ] [ P ] [ P ]	[ X ] *						
COMPARE [ N /N	] [N]	[ N ] [ ]	[ N ]						
RECOMMENDATIONS	(If different	from NASA)							
[ /	] [ ]	[ ] [ ] (A)	[ ] DD/DELETE)						
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]								
INADEQUATE [ ] REMARKS: NASA FMEA 05-6IA-2176-1 COMPONENTS RPC 26, 27, 28 & 29 ARE ANALYZED FOR FAILURE MODES 'FAIL OPEN' AND 'SHORTS TO GROUND'. IOA RECOMMENDS COMBINING IOA FMEAS 4042, 4043, 4047 AND 4049 TO									

AGREE WITH NASA CRIT AND SCREENS.

ASSESSME ASSESSME NASA FME SUBSYSTE MDAC ID: ITEM: LEAD ANA	ENT EA ; EM:	I] #:	D:	RMS-46 05-612 RMS/E1 4044 REMOTI	044 A-217 PD&C E POV					NASA DATA BASELINE NEW	[	x	]	
			•											
ASSESSMI	ENT	:												
	CR			ITY	RI	EDUND	ANCY	SCRE	ens	}		CL CEN		
	1		LIGH W/FU	T NC	A		В			С		LEP	1	
NASA	г	1	/1	1	ſ	1	r	1	ſ	1	Ε	х	1	*
IOA	į	2	$\sqrt{2}$	]	ĺ	j	Ĭ	j	į	]	Ē	X	j	
COMPARE	[	N	/N	]	1	]	[	1	[	]	[		]	
RECOMMEN	NDA'	TI	ons:	(If	dif:	feren	t fr	om NAS	SA)					
	[		/	]	[	]	[	]	[	] (A			] ELE	ETE)
* CIL RI	e <b>te</b> :	NT	ION	RATION	ALE:	(If	appl	icabl	e)	ADEQUATE IADEQUATE	[		]	
NO ISSU	REMARKS: NO ISSUE, IOA CONCURS WITH NASA FMEA/CIL, ADD INADVERTENTLY OPENS TO THE IOA FMEA AND UPGRADE IOA CRIT TO 1/1.													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	: [ x ]								
SUBSYSTEM:									
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
	NC A	В С	11111						
NASA [ 3 /1R IOA [ 2 /1R	[ P ] [ E ] [ P ] [	P ] [ P ] NA] [ NA]	[ x ] *						
COMPARE [ N /	] [ ] [	иј [иј	[ N ]						
RECOMMENDATIONS:	(If different i	from NASA)							
[ 2 /1R	[1] [		[ X ] DD/DELETE)						
* CIL RETENTION	RATIONALE: (If app	ADEQUATE	[ ]						
REMARKS:		INADEQUATE	[ ]						
IOA RECOMMENDS U		T TO 2/1R AND COMBI A 05-61A-2179-1 FAI							
AND STARBOARD CO	MPONENTS. RECOMME	END COMBINING RMS-4							
THE FIRST FAILUR NOT BE USED WITH	AND STARBOARD COMPONENTS. RECOMMEND COMBINING RMS-4045 AND 4046 INTO 4045. UPGRADE NASA FMEA TO CRIT 2/1R. THE FIRST FAILURE WOULD CAUSE LOSS OF MISSION SINCE THE RMS WOULD NOT BE USED WITHOUT BACKUP POWER AVAILABLE. REFER ALSO TO IOA FMEA 4046.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4046 05-6IA-2	MS-4046 BASELINE 05-6IA-2179-1 NEW					
SUBSYSTEM: MDAC ID: ITEM:	4046	C OWER CONTROLLER, 1	RPC 30				
LEAD ANALYST:	ROBINSON						
ASSESSMENT:							
CRITICAL	S.	CIL ITEM					
FLIGH HDW/FU	NC .	A B	С	11211			
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] [ P ] [ P ] [ NA] [	P ] NA]	[ x ] *			
COMPARE [ N /	] [	] [N] [	n ]	[и]			
RECOMMENDATIONS:	(If di	fferent from NASA	)				
[ 2 /1R	] [	1 ] [ N/] [	P ] (Al	[ X ] DD/DELETE)			
* CIL RETENTION	RATIONALE	: (If applicable)	ADEQUATE NADEQUATE	[ ]			
COMPONENTS ON ON AND STARBOARD CO	E FMEA. MPONENTS. ADE NASA	NASA CRIT TO 2/1R NASA FMEA 05-61A- RECOMMEND COMBI FMEA TO CRIT 2/1R AUSE LOSS OF MISS	AND COMBII 2179-1 FAI NING RMS-4	NING IOA LS BOTH PORT 045 AND 4046			

NO ISSUE ON THIS FMEA. REFER TO ISSUE COVERAGE ON IOA FMEA 4045.

NOT BE USED WITHOUT BACKUP POWER AVAILABLE.

ASSESSME ASSESSME NASA FME	NT	I	D:		04	7	76-1						ASA DAT BASELII NI		[			
SUBSYSTE MDAC ID:				RMS/EI			VER C	CONT	'RO	OLLE	R, I	RPO	28					
LEAD ANA	LY	ST	:	ROBIN	SO	N												
ASSESSME	NT	:																
		F	LIGH'			RI A	EDUNE		Y B	SCR	EENS	s c				IL PEN	1	
MACA			•						_	1	r	_	1		•	v	1	
IOA	[	3	/1R /2R	]	[	r	]	[	P	]	[	P	]		[	Λ	]	~
COMPARE	[	N	/N	]	[	N	]	ĺ	N	]	[		]		[	N	)	
RECOMMEN	DA:	ΓI	ons:	(If	<b>d</b> :	if	ferer	nt f	r	om N	ASA)	)						
	[		/	]	[		]	[		]	[		1			/DI		ĒTE)
* CIL RE	TEI	NT:	ION 1	RATION	AL	E:	(If	app	11	icab	-	IA IAN	DEQUATI	≘ ≅	[		]	
REMARKS: NASA FME																		in i

ANALYZED FOR FAILURE MODES 'FAIL OPEN' AND 'SHORTS TO GROUND'.
IOA RECOMMENDS COMBINING IOA FMEAS 4042, 4043, 4047 AND 4049 TO AGREE WITH NASA CRIT AND SCREENS.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/12/88 RMS-404 05-6IA-	8 2176 <b>-</b> 1		NASA DATA: BASELINE NEW				
SUBSYSTEM: MDAC ID: ITEM:	4048	aC.	NTROLLER,	RPC 29				
LEAD ANALYST:	ROBINSO	N						
ASSESSMENT:								
CRITICA FLIC		REDUNDA	NCY SCREE	ins	CIL ITEM			
	UNC	A	В	С				
NASA [ 2 /: IOA [ 3 /:	R ] [ R ] [	P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] *			
COMPARE [ N /	] [	N ]	[и]	[ ]	[и]			
RECOMMENDATIONS	: (If d	lifferent	from NAS	;A)				
[ /	] [	]	[ ]	[ ] (A)	[ ] DD/DELETE)			
* CIL RETENTION	RATIONAL	Æ: (If a	applicable		[ ]			
ADEQUATE [ ] INADEQUATE [ ] REMARKS:  NASA FMEA 05-61A-2176-1 COMPONENTS RPC 26, 27, 28 & 29 ARE ANALYZED FOR FAILURE MODES 'FAIL OPEN' AND 'SHORTS TO GROUND'. IOA RECOMMENDS COMBINING IOA FMEAS 4042, 4043, 4047 AND 4049 TO AGREE WITH NASA CRIT AND SCREENS.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-404	9X 2028-9		NASA DA BASELI N				
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4049 SWITCH,							
LEAD ANALYST:	ROBINSO	N						
ASSESSMENT:								
CRITICAI FLIGH	CIL ITEM							
HDW/FU		A	В	С	III			
NASA [ 1 /1 IOA [ 1 /1	] [	]	[ ]	[ ]	[ X ] * [ X ]			
COMPARE [ /	] [	]	[ ]	[ ]	[ ]			
RECOMMENDATIONS:	(If d	ifferent	from N	ASA)				
[ /	] [	]	[ ]	[ ]	[ ] (ADD/DELETE)			
* CIL RETENTION	RATIONAL	E: (If a	pplicab	le) ADEQUAT INADEQUAT				
REMARKS: IO ISSUE. IOA CONCURS WITH NASA FMEA. RECOMMEND IOA GENERATE A NEW FMEA WITH THE FAILURE MODE AND CRIT OF NASA POST 51L FMEA 05- SIA-2028-9.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/10/88 RMS-4050X 05-6IA-207	76-2			NASA I BASEI			]	
SUBSYSTEM: MDAC ID: ITEM:	4050								
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
C1/2 1 7 C1107 2 7 C C C C C C C C C C C C C C C C C							CIL ITEM		
<del></del>	NC A		В		С		libr		
NASA [ 3 /3 IOA [ 3 /3	] [	]	[ ]	[	]		[ [	] * ]	
COMPARE [ /	] [	]	[ ]	(	]		[	]	
RECOMMENDATIONS:	(If dif	ferent	from	n NASA	)				
[ /	] [	]	[, ]	(	]	(AD	[ D/DE	] LETE)	
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [ ] INADEQUATE [ ]								
REMARKS: NO ISSUE. IOA CONCURS WITH NASA FMEA. RECOMMEND IOA GENERATE A NEW FMEA WITH THE FAILURE MODE AND CRIT OF NASA POST 51L FMEA 05 NTA-2076-2.									

ASSESSMENT DA ASSESSMENT ID NASA FMEA #:	: RMS-405	12/88 NASA DATA: IS-4051X BASELINE [ ] I-6IA-2001-2 NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4051 CIRCUIT	·							
LEAD ANALYST:	ROBINSO	N							
ASSESSMENT:									
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
	/FUNC	A	В	С	TIE	1			
NASA [ 3 IOA [ 3	/3 ] [ /3 ] [	]	[ ]	[ ]	[	] *			
COMPARE [	/ ] [	1	[ ]	[ ]	[	]			
RECOMMENDATIO	NS: (If d	ifferent	from NA	ASA)					
[	/ ] [	. 1	[ ]	[ ] (A)	[ .DD/DI	] ELETE)			
	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]								
REMARKS: NO ISSUE. IOA CONCURS WITH NASA FMEA. RECOMMEND IOA GENERATE A NEW FMEA WITH THE FAILURE MODE AND CRIT OF NASA POST 51L FMEA 05- 6IA-2001-2.									

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4052X	78-2		NASA DATA: BASELINE [ ] NEW [ X ]					
	RMS/EPD&C 4052 REMOTE PO								
LEAD ANALYST:	ROBINSON	ROBINSON							
ASSESSMENT:									
CRITICAI FLIGH	LITY R	EDUNDANC	SCRE	ENS		CIL	4		
	INC A	C A B C							
NASA [ 3 /3 IOA [ 3 /3	] [	] [	]	[	]	[	] *		
COMPARE [ /	] [	] [	]	[	3	[	]		
RECOMMENDATIONS	(If dif	ferent f	com NA	SA)					
[ /	] [	] [	]		] (AI	[ [D/DC	] ELETE)		
* CIL RETENTION	RATIONALE:	(If app	licabl	ΑI	DEQUATE DEQUATE		]		
REMARKS: NO ISSUE. IOA O NEW FMEA WITH TH 6IA-2178-2.	CONCURS WIT HE FAILURE	H NASA FI MODE AND	MEA. CRIT	RECON	MEND IO ASA POST	A GEI 51L	NERATE A FMEA 05		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/12/88 RMS-4053X 05-6IA-2176-2	NA B	SA DATA: ASELINE [ ] NEW [ X ]
SUBSYSTEM:	4053		26, 27, 28, 29
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
CRITICAL: FLIGHT		ANCY SCREENS	CIL ITEM
HDW/FU	NC A	в с	
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] ] [ ]	[ F ] [ P [ F	[ X ] *
COMPARE [ /	] [ N ]	[ N ] [ N	] [N]
RECOMMENDATIONS:	(If differen	t from NASA)	
[ /	] [ ]	נ ו	] [ ] (ADD/DELETE)
* CIL RETENTION I	RATIONALE: (If		EQUATE [ ] EQUATE [ ]
REMARKS: GENERATE AN IOA I COMPONENTS.	FMEA FOR THESE		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/20/88 RMS-4054X 05-6IA-217	RMS-4054X BASELINE					
SUBSYSTEM: MDAC ID: ITEM:	4054						
LEAD ANALYST:	ROBINSON						
ASSESSMENT:							
CRITICAL		EDUNDANC	Y SCREEN	IS	CIL ITEM		
FLIGH HDW/FU		1	В	С		•	
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ ]	F ] [ F ] [	P ] P ]	[ X	] <b>*</b> ]	
COMPARE [ /	] [	] [	] [	. 1	[	]	
RECOMMENDATIONS:	(If dif:	ferent f	rom NASA	7)			
[ /	] [	] [	] [	[ ] ( <b>A</b> I	[ DD/DE	] LETE)	
* CIL RETENTION	RATIONALE:	(If app		ADEQUATE INADEQUATE	[	]	
REMARKS: NO ISSUE. IOA CONCURS WITH NASA FMEA. RECOMMEND IOA GENERATE A NEW FMEA WITH THE FAILURE MODE AND CRIT OF NASA POST 51L FMEA 05 61A-2179-2.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA BASELINI NET						
SUBSYSTEM:	RMS/EPD&C 4101 SWITCH, S1		, [ ]					
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICAL: FLIGHT	CIL ITEM							
HDW/FUI		ВС						
NASA [ / IOA [ 2 /1R	] [ ] [ ] [ P ] [	P ] [ P ]	[ x ] *					
COMPARE [ N /N	] [ N ] [	и ] [и]	[ N ]					
RECOMMENDATIONS:	(If different i	from NASA)						
[ /	] [ ] [	] [ ]	[ ] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable)								
DOWN DVC .		ADEQUATE INADEQUATE						
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5827. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS								

OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	ENT	II	<b>):</b>		3/06/87 RMS-4102 EPD&C 05-6-2658-2				NASA DATA: BASELINE [ X ] NEW [ ]						
SUBSYSTE MDAC ID:					RMS/I 4102 SWITO										
LEAD ANA	LYS	ST	:		ROBIN	NOON									
ASSESSMI	INT	:													
	CR		ICA LIG		TY	]	REDUN	IDANCY	SC	REENS			CII		
	1				С	;	A	В		С					
NASA IOA	[	3	/ /3	<b>.</b>	]	[	]	[	]	[	]		[	]	*
COMPARE	[	N	/N	ſ	]	[	]	[	]	[	]		[	]	
RECOMMEN	NDA!	ric	SNC	<b>:</b>	(I	f di	ffere	ent fr	om :	NASA)					
			/		]	[	]	[	]	[	]	(A)		DELI	ETE)
* CIL RI	ETE	NT:	ION	I R	ATIO	NALE	: (If	appl	ica	ble)					
												JATE JATE	[	]	
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5828 THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.															

ASSESSMEN ASSESSMEN NASA FME	II TN	<b>-</b>	3/06/8 RMS-43 EPD&C		6-2658	B <b>-</b> 1	NASA DATA BASELINI NEV		
SUBSYSTEM MDAC ID:	<b>1</b> :		RMS/EI 4103 SWITCH		2				
LEAD ANA	LYST	:	ROBINS	SON					
ASSESSME	NT:								
C		ICAL:	ITY	R	EDUND	ANCY	SCRE	ens	CIL ITEM
			NC	A		В	•	С	IIEM
NASA IOA	[ 2	/ /1R	]	[ [ P	]	[ [ P	]	[ ] [ P ]	[ ] * [ X ]
COMPARE	[ N	/N	]	[ N	]	[ N	]	[ N ]	[ N ]
RECOMMENI	OATI	ons:	(If	dif:	feren	t fr	om NA	SA)	
	[	/	]	[	]	[	]	[ ]	[ ADD/DELETE)
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ] INADEQUATE [ ]									
REMARKS:									

THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	NT NT A	D# II #:	ATE:	3/0 RMS EPI	3/06/87 RMS-4104 EPD&C 05-6-2658-2					NASA DATA: BASELINE [ X ] NEW [ ]				
SUBSYSTE MDAC ID: ITEM:				410	RMS/EPD&C 4104 SWITCH, S2									
LEAD ANA	LYS	ST	:	ROI	ROBINSON									
ASSESSME	NT:	:												
	CRI		ICAI LIGH			REDUN	IDANC	SCR	EENS			CII		
	I					A	I	3	C	2			<b></b> -	
NASA IOA	]	3	/ /3	]	]	]	[	]	[	]		[		*
COMPARE	[	N	/N	]	[	]	[	]	[	]		[	]	
RECOMMEN	iDA?	ric	ons:	:	(If d	iffere	ent fi	rom N	IASA)					
	[		/	]	[	3	[	]	[	]	(A		] DELE	TE)
* CIL RE	TEI	NT:	ION	RAT:	IONAL	E: (I1	f app:	licab	7	ADEQU ADEQU	ATE ATE	[	]	
REMARKS: DISREGAR THIS CON SYSTEM F OF THE R	RD ' IPOI ND	NE S	TN HOUI	IS PA	ART O	F THE LYZED	EPD&	C PAY REGA	A FMI LOAD	EA EP BAY TO TH	D&C- MECH E TO	5829 ANIO	O.	POWER ECTS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/15/88 RMS-4105 05-6IB-MPM-2A	A: E [ ] W [ X ]						
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4105 SWITCH, S5							
LEAD ANALYST:	ROBINSON	ROBINSON						
ASSESSMENT:								
CRITICAL: FLIGH	ITY REDUNDA	ANCY SCREENS	CIL ITEM					
	NC A	В С	1111					
NASA [ 2 /1R IOA [ 2 /2	] [ P ] ] [ ]	[ P ] [ P ] [ ] [ ]	[ X ] * [ X ]					
COMPARE [ /N	] [ N ]	[ N ] [ N ]	[ ]					
RECOMMENDATIONS:	(If differen	t from NASA)						
( /	] [ ]		[ ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]								
REMARKS: UPGRADE IOA CRIT AND SCREENS, COMBINE COMPONENTS ON IOA FMEAS								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4106	В		[				
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4106 SWITCH, S5							
LEAD ANALYST:	ROBINSON	ROBINSON						
ASSESSMENT:								
CRITICAL FLIGH		INDANCY SCREENS		CIL ITEM				
HDW/FU		В	С	11211				
NASA [ 1 /1 IOA [ 1 /1	] [ P ] ] [ ]	[ P ] [ [ ] [	P ]	[ X ] * [ X ]				
COMPARE [ /	] [ N ]	[ N ]	N ]	[ ]				
RECOMMENDATIONS:	(If differ	ent from NASA)						
[ /	] [ ]	נ ז נ	] (AD	[ ] D/DELETE)				
* CIL RETENTION	RATIONALE: (I		ADEQUATE IADEQUATE	[ ]				
REMARKS: REFER TO REMARKS ON IOA RMS-4108. COMBINE IOA FMEAS AND ADD THIS SWITCH TO NASA FMEA. IOA RECOMMENDS COMBINING THIS FMEA WITH RMS-4108 AND ADDING THIS SWITCH. S5, TO THE NASA FMEA 05-61B-MPM-2B. THIS SWITCH IS PART OF THE PORT RMS. THE POST 51L NASA FMEAS DO NOT INCLUDE THE PORT								

RMS BUT THE BASELINE NASA FMEAS DID INCLUDE THE PORT RMS.

NASA DATA:

BASELINE [ ] NEW [ X ]

ASSESSMENT DATE: 1/15/88

SUBSYSTEM: RMS/EPD&C

ASSESSMENT ID: RMS-4107 NASA FMEA #: 05-61B-MPM-2A

MDAC ID: ITEM:	4107 SWITCH,	S2					
LEAD ANALYST:	ROBINSO	N					
ASSESSMENT:							
CRITIC FLI	ALITY	REDUNDANG	CY SCREENS	3	CIL		
	FUNC	A	В	С	ITEM		
NASA [ 2 / IOA [ 2 /	1R ] [ 2 ] [	P ] [	P ] [	P ]	[ X ] * [ X ]		
COMPARE [ /	и ] [	и ] [	и ] [	n ]	[ ]		
RECOMMENDATION	S: (If d	ifferent :	from NASA)				
[ /	] [	ĵ [	] [	) (A)	[ ] DD/DELETE)		
* CIL RETENTIO	N RATIONAL	E: (If app	plicable) IN	ADEQUATE NADEQUATE	[ ]		
REMARKS: IOA CONCURS WI AND CHANGE RED	UNDANCY SC	REENS ACC	ORDINGLY.		ŕ		
IOA RECOMMENDS  2A. IOA RECOM  4107 FOR THIS  EITHER SWITCH	MENDS IOA ( FAILURE MO)	COMBINÈ CO	OMPONENTS	ON IOA FMI	EAs 4105 AND		
LOSS OF OPERAT MISSION AND PO ARM IF IT CANN	ION OF THE SSIBLY REQ OT BE SAFE	UIRE JETT: LY STOWED	ISON OF TH AND POSSI	HE REMOTE N	MANIPULATOR		
CREW/VEHICLE I REFER TO IOA F		T BE JETT	ISONED.				

ASSESSMENT D ASSESSMENT I NASA FMEA #:	n•					NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTEM: MDAC ID: ITEM:		RMS/EP 4108 SWITCH												
LEAD ANALYST	:	ROBINS	ROBINSON											
ASSESSMENT:														
		[TY	R	EDUNI	DANG	CY	SCRE	EENS	5		CI		7	
_	LIGHT W/FUN	NC L	A			В			С			EM	•	
NASA [ 1 IOA [ 1	/1 /1	]	[ <b>F</b>	']	]	P	]	[	P	]	[	X X	]	*
COMPARE [	/	]	[ N	1 ]	[	N	]	[	N	]	[		]	
RECOMMENDATI	ons:	(If	dif	fere	nt :	fro	om NA	ASA)	l					
[	/	]	[	]	[		]	[		] (A	[ DD/	DE	] :LE	TE)
* CIL RETENT	ION 1	RATIONA	LE:	(If	apj	pl:	icab]			DEQUATE DEQUATE			]	
REMARKS: THE FAILURE 2B IS "FAILS	CLOS	SED (ON	I) "	WITH	<b>A</b> :	1/:	L CRI	ET ?	ASS	ASA FMEA SIGNED.	TH	Œ	FA	ILURI

THE FAILURE MODE FOR SWITCH 36V73A8A2S2 IN NASA FMEA 05-61B-MPM-2B IS "FAILS CLOSED (ON)" WITH A 1/1 CRIT ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2D IS "PREMATURE CLOSE" WITH CRIT 1/1 ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2E IS "CONTACT TO CONTACT SHORT" WITH A CRIT 1/1 ASSIGNED. IOA CONCURS THAT THESE ARE ALL CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE CONSIDERED FOR THE CRITICAL ITEMS LIST. SINCE THE FAILURE MODES ARE ALL FOR THE CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE INCLUDED ON THE CRITICAL ITEMS LIST. SINCE ALL THE FAILURES ARE FOR THE SAME SWITCH AND THE CRITICALITIES ASSIGNED ARE ALL 1/1, IOA RECOMMENDS THAT ALL THESE FOUR FAILURE MODES FOR THIS SWITCH AND FOR ITS CORRESPONDING SWITCH ON THE PORT ARM BE COMBINED INTO ONE FMEA. IOA RECOMMENDS COMBINING RMS-4106 AND 4108 AND MODIFYING THE FMEA TO INCLUDE THE FAILURE MODES OF THE FOUR NASA FMEAS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/28/88 RMS-4108 05-6IB-MPM-2B, D, E, G	NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4108 SWITCH, S2						
LEAD ANALYST:	ROBINSON						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUNDANCY SCREENS	CIL ITEM					
	NC A B	C					
NASA [ 1 /1 IOA [ 1 /1	] [P] [P] [	P ] [ X ] * [ X ]					
COMPARE [ /	] [N] [N] [	и ] [ ]					
RECOMMENDATIONS:	(If different from NASA)						
[ /	] [ ] [ ] [	] [ ] (ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If applicable)	ADEQUATE [ ]					
REMARKS:  THE FAILURE MODE FOR SWITCH 36V73A8A2S2 IN NASA FMEA 05-61B-MPM- 2B IS "FAILS CLOSED (ON)" WITH A 1/1 CRIT ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2D IS "PREMATURE CLOSE" WITH CRIT 1/1 ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2E IS "CONTACT TO CONTACT SHORT" WITH A CRIT 1/1 ASSIGNED. THE FAILURE MODE FOR SWITCH S2 IN NASA FMEA 05-61B-MPM-2G IS "SHORTS POLE TO POLE" WITH A CRIT 1/1 ASSIGNED. IOA CONCURS THAT ALL THE FAILURE MODES ARE CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE INCLUDED ON THE CRITICAL ITEMS LIST. SINCE ALL THE FAILURES ARE FOR THE SAME SWITCH AND THE CRITICALITIES ASSIGNED ARE ALL 1/1, IOA RECOMMENDS THAT ALL THESE FOUR FAILURE MODES FOR THIS SWITCH AND FOR ITS							

TO INCLUDE THE FAILURE MODES OF THE FOUR NASA FMEAS.

CORRESPONDING SWITCH ON THE PORT ARM BE COMBINED INTO ONE FMEA. IOA RECOMMENDS COMBINING RMS-4106 AND 4108 AND MODIFYING THE FMEA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		2D	NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD&C 4108 SWITCH, S2			
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL	<del></del> -	UNDANCY SCREE	INS	CIL ITEM
FLIGH HDW/FU	NC A	В	С	
NASA [ 1 /1 IOA [ 1 /1	] [ P ] ] [ ]	[ P ] [ ]	[ P ] [ ]	[ X ] * [ X ]
COMPARE [ /	] [N]	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If diffe	rent from NAS	SA)	
. [ /	] [ ]	[ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (	If applicable	adequate	[ ]
REMARKS: THE FAILURE MODE 2B IS "FAILS CLO MODE FOR THE SAM	SED (ON)" WI	TH A 1/1 CRIT	r assigned.	THE FAILURE

THE FAILURE MODE FOR SWITCH 36V73A8A2S2 IN NASA FMEA 05-61B-MPM-2B IS "FAILS CLOSED (ON)" WITH A 1/1 CRIT ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2D IS "PREMATURE CLOSE" WITH CRIT 1/1 ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2E IS "CONTACT TO CONTACT SHORT" WITH A CRIT 1/1 ASSIGNED. IOA CONCURS THAT THESE ARE ALL CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE CONSIDERED FOR THE CRITICAL ITEMS LIST. SINCE THE FAILURE MODES ARE ALL FOR THE CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE INCLUDED ON THE CRITICAL ITEMS LIST. SINCE ALL THE FAILURES ARE FOR THE SAME SWITCH AND THE CRITICALITIES ASSIGNED ARE ALL 1/1, IOA RECOMMENDS THAT ALL THESE FOUR FAILURE MODES FOR THIS SWITCH AND FOR ITS CORRESPONDING SWITCH ON THE PORT ARM BE COMBINED INTO ONE FMEA. IOA RECOMMENDS COMBINING RMS-4106 AND 4108 AND MODIFYING THE FMEA TO INCLUDE THE FAILURE MODES OF THE FOUR NASA FMEAS.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/28/88 RMS-4108C 05-6IB-MPM-2E	NASA D BASEI	DATA: LINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4108 SWITCH, S2		
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
FLIG		DANCY SCREENS B C	CIL ITEM
NASA [ 1 /1 IOA [ 1 /1	] [ P ] ] [ ]	[ P ] [ P ] [ ]	[ X ] * [ X ]
COMPARE [ /	] [N]	[и] [и]	[ ]
RECOMMENDATIONS	: (If differen	nt from NASA)	
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	ADEQUA	TE [ ]
2B IS "FAILS CL MODE FOR THE SA CLOSE" WITH CRI SAME SWITCH IN SHORT" WITH A C CREDIBLE FAILUR CRITICAL ITEMS CREDIBLE FAILUR CRITICAL ITEMS SWITCH AND THE	OSED (ON)" WITH ME SWITCH IN NAS T 1/1 ASSIGNED. NASA FMEA 05-611 RIT 1/1 ASSIGNEN ES AND RECOMMENI LIST. SINCE THI ES AND RECOMMENI LIST. SINCE ALI CRITICALITIES AS	V73A8A2S2 IN NASA F A 1/1 CRIT ASSIGNE SA FMEA 05-61B-MPM- THE FAILURE MODE B-MPM-2E IS "CONTAC D. IOA CONCURS THA DS THAT THEY BE CON E FAILURE MODES ARE DS THAT THEY BE INC L THE FAILURES ARE SSIGNED ARE ALL 1/1 DES FOR THIS SWITCH	MEA 05-61B-MPM- D. THE FAILURE TO IS "PREMATURE TO CONTACT T THESE ARE ALL SIDERED FOR THE ALL FOR THE LUDED ON THE FOR THE SAME , IOA RECOMMENDS

TO INCLUDE THE FAILURE MODES OF THE FOUR NASA FMEAS.

CORRESPONDING SWITCH ON THE PORT ARM BE COMBINED INTO ONE FMEA. IOA RECOMMENDS COMBINING RMS-4106 AND 4108 AND MODIFYING THE FMEA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/28/88 RMS-4108D 05-6IB-MPM	M-2G	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4108 SWITCH, S	2		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL		EDUNDANCY	SCREENS	CIL ITEM
FLIGH HDW/FU		В	С	
NASA [ 1 /1 IOA [ 1 /1	] [ P	] [ P	] [ P ] ] [ ]	[ X ] * [ X ]
COMPARE [ /	] [ N	] [ N	] [N]	[ ]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)	
[ /	] [	] [	] [ ] (A	[ ] .DD/DELETE)
* CIL RETENTION	RATIONALE:	(If appl	icable) ADEQUATE INADEQUATE	-
REMARKS: THE FAILURE MODE	FOR SWITC	H 36V73A8.	A2S2 IN NASA FMEA 1 CRIT ASSIGNED.	05-61B-MPM- THE FAILURE

2B IS "FAILS CLOSED (ON)" WITH A 1/1 CRIT ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2D IS "PREMATURE CLOSE" WITH CRIT 1/1 ASSIGNED. THE FAILURE MODE FOR THE SAME SWITCH IN NASA FMEA 05-61B-MPM-2E IS "CONTACT TO CONTACT SHORT" WITH A CRIT 1/1 ASSIGNED. IOA CONCURS THAT THESE ARE ALL CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE CONSIDERED FOR THE CRITICAL ITEMS LIST. SINCE THE FAILURE MODES ARE ALL FOR THE CREDIBLE FAILURES AND RECOMMENDS THAT THEY BE INCLUDED ON THE CRITICAL ITEMS LIST. SINCE ALL THE FAILURES ARE FOR THE SAME SWITCH AND THE CRITICALITIES ASSIGNED ARE ALL 1/1, IOA RECOMMENDS

THAT ALL THESE FOUR FAILURE MODES FOR THIS SWITCH AND FOR ITS CORRESPONDING SWITCH ON THE PORT ARM BE COMBINED INTO ONE FMEA. IOA RECOMMENDS COMBINING RMS-4106 AND 4108 AND MODIFYING THE FMEA

TO INCLUDE THE FAILURE MODES OF THE FOUR NASA FMEAS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/15/88 RMS-4109 05-6IB-M	/15/88 NASA DA MS-4109 BASEL 5-6IB-MPM-1							
	RMS/EPD& 4109 FUSE, F6								
LEAD ANALYST:	LEAD ANALYST: ROBINSON								
ASSESSMENT:									
CRITICAL: FLIGHT		REDUNDA	NCY SCREI	ens	CIL				
		A	В	С	ITEM				
NASA [ 3 /1R IOA [ 3 /2R	] [	P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] *				
COMPARE [ /N	] [	n j	[ ]	[ ]	[ ]				
RECOMMENDATIONS:	(If di	fferent	from NAS	5A)					
[ /	] [	]	[ ]	[ ] (A)	[ ] DD/DELETE)				
* CIL RETENTION I	RATIONALE	: (If a	pplicable						
				ADEQUATE INADEQUATE	[ ]				
REMARKS: IOA CONCURS WITH CRIT TO 3/1R. RI 4109, 4110, 4111,	ECOMMEND	COMBINI	NG THE CO	COMMEND UPGRA	ADING IOA				

ASSESSM ASSESSM NASA FM	ENT	D2 II #:	ATE: O:		/8 41 IB	8 10 -N	) IPM	<b>I-1</b>						_	ASA BASE	LI		[			
SUBSYST MDAC ID ITEM:				RMS/ 4110 FUSE	)																
LEAD AN	ALYS	ST	:	ROBI	NS	01	1														
ASSESSM	ENT:	:																			
	CR		ICALI LIGHT	TY			RE	DUNE	A	ICY	5	SCREE	EN:	3					IL PEN	4	
	]			IC			A			В				С				_		_	
NASA IOA	[	3 3	/1R /2R	]		[	P	]		P P	:	]	[	P P	]			[ [		]	*
COMPARE	[		/N	]		[	N	]	1			]	[		]			[		]	
RECOMME	NDA'	ΓI	ons:	(1	f	di	i.f1	eren	ıt	fr	01	m NAS	SA)	)							
	[		/	]		[		]	1	•		]	[		]		(A	] DD,	/DI	] ELE	ETE)
* CIL R		NT:	ION I	RATIC	NA	LI	Ξ:	(If	aj	p1	i	cable			DEQU DEQU			-		]	
REMARKS IOA CON	CUR																				

CRIT TO 3/1R. RECOMMEND COMBINING THE IOA FMEAS 4109, 4110, 4111, AND 4112 FOR ASSESSMENT PURPOSES.

ASSESSME ASSESSME	NT NT	DA II	ATE:	1/15/8 RMS-4	/88 NASA DATA: 4111 BASELINE [ IB-MPM-1 NEW [								]					
NASA FME	A #	:		05-61	B-1	MPI	1-1						NE	W	[	<b>x</b> ]		
SUBSYSTE MDAC ID:	M:																	
ITEM:				FUSE,	F	11												
LEAD ANA	LYS	T:	:	ROBIN	SO1	N												
ASSESSME	NT:	:																
	CRI		[CAL] LIGHT	[TY		RI	EDUNI	OAN	CY	SCI	REEN	s			CI	L EM		
	H			1C		A			В			С			11	EM		
NASA	[	3	/1R	]	[	P	]	[	P	]	Ĺ	P	]		[	]	*	
COMPARE	[		/N	]	[	N	]	[		]	[		]		[	)		
RECOMMEN	<b>DA'I</b>	CIC	ons:	(If	<b>d</b> :	if	ferer	nt i	fro	om 1	NASA	)						
	[		/	]	[		]	[		]	[		] (	(AD		DEI		E)
* CIL RE	TEN	T	CON I	RATION	AL	Ε:	(If	apı	21:	ical					_	,		
											I	iA IAN	DEQUATE DEQUATE	2	[	]		
REMARKS: IOA CONC CRIT TO 4111. AN	URS 3/1	lR.	. RI	ECOMME	ND	C	OMBIN	NIN	3 :	PHE	IOA							
	3/1	lR.	. RI	ECOMME	ND	C	OMBIN	NIN	3 :	PHE	IOA							

ASSESSMENT ID NASA FMEA #:				NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EP 4112 FUSE,	D&C			
LEAD ANALYST:	ROBINS	ОИ			
ASSESSMENT:					
	CALITY	REDUND	ANCY SCREE	ens	CIL ITEM
	IGHT //FUNC	A	В	С	
NASA [ 3 IOA [ 3	/1R ] /2R ]	[ P ] [ ]	[ P ] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [	/N ]	[ N ]	[ ]	[ ]	[ ]
RECOMMENDATIO	ons: (If	differen	t from NAS	SA)	
[	/ ]	[ ]	[ ]	[ ]	[ ] .DD/DELETE)
* CIL RETENTI	ON RATIONA	LE: (If	applicable	e) ADEQUATE INADEQUATE	[ ]
REMARKS: IOA CONCURS W CRIT TO 3/1R. 4111, AND 411	RECOMMEN	ID COMBIN	ING THE I	COMMEND UPGR	ADING IOA

ASSESSME ASSESSME NASA FME	ENT ENT EA	D I #:	ATE: D:	1/ RM 05	L/15/88 NASA DATA RMS-4113 BASELINE D5-6IB-MPM-4 NEW									1E						
SUBSYSTE MDAC ID:	: M			RM 41	S/E	PD	&C													
LEAD ANA	LY	ST	:	RO	BINS	501	N													
ASSESSME	ENT	:																		
	CR		ICAL LIGH				R	ED	UND	AN	CY	sc	CREE	NS				CIL		
	1		W/FU				A				В			C	:			ITE	M.	
NASA IOA	[	3 3	/1R /2R	]		]	P	]		[	P P	]		[ E	) )			[	] * ]	
COMPARE	[		/N	]		[	N	]		[		]		[	]			[	3	
RECOMMEN	DA'	ric	ons:		(If	d:	if	fei	rent	t 1	fro	om	NAS	A)						
	(		/	]		[		]		[		]		[	]	(	ΑD	[ D/D	] ELET	E)
* CIL RE	TEI	T.	ION 1	RAT	IONA	\LI	2:	(	If a	apr	pli	ica	ble	)						
														A INA	.DEQ .DEQ	UATE UATE		[	]	
REMARKS: UPGRADE CORRESPO IOA CONC	IOA ND:	ENC	g coi	$\mathbf{IPO}$	NENI	S	FC	DR	POF	₹Т	AN	ID	STA	RBC	ARD	SYS	TE	MS.		
SPECIFY BOTH THE	REI	PEI	RENCI	E D	ESIG	N	\TC	DRS	AN E	1D	DI	D	NOT	DU	PLI	CATE	F	MEAS	s FO	R

IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA.

FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD

BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/29/88 RMS-4114 05-6IB-MPM-5	/29/88       NASA DATA:         MS-4114       BASELINE [ ]         5-6IB-MPM-5       NEW [ X ]								
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4114 HYBRID RELAY	, K72								
LEAD ANALYST:	ROBINSON									
ASSESSMENT:										
FLIGH	ITY REDU			CIL ITEM						
	NC A									
NASA [ 1 /1 IOA [ 1 /1	] [ N ]	[ N ] [ ]	[ N ] [ ]	[ X ] *						
COMPARE [ /	] [N]	[ N ]	[ N ]	[ ]						
RECOMMENDATIONS:	(If differ	ent from 1	NASA)							
( /	] [ ]	[ ]	[ ] (	[ ] ADD/DELETE)						
* CIL RETENTION	RATIONALE: (I	f applical	ole) ADEQUATE INADEQUATE							
REMARKS: UNTIMELY OPERATI PHYSICAL DAMAGE POSSIBLY LOSS OF FMEAS DO NOT SPE FMEAS FOR PORT A IOA HAS TWO FMEA ASSESSMENT PURPO SAME ONE (1) NAS IOA RECOMMENDS OF FMEAS INTO ONE (4118, 4120, 4122)	TO THE RMS/PA CREW/VEHICLE CIFY REFERENC ND STARBOARD S THAT CORRES SES THE BOTH A FMEA. COMBINING THE 1) FMEA FOR A	YLOADS/ORI COULD RESE DESIGNATE SYSTEMS. SPOND TO ORI (2) IOA FROM COMPONENTS	BITER. LOSS SULT. THE NA FORS AND DO N THEREFORE, S NE NASA POST MEAS WERE COM	OF MISSION AND SA POST 51L OT DUPLICATE SINCE IOA DOES, 51L FMEA. FOR IPARED TO THE						

ASSESSME ASSESSME NASA FME	NT I	D:	RMS-4													
SUBSYSTE MDAC ID:			RMS/E 4115 HYBRI			ΔΑΥ,	K	19								
LEAD ANA	LYSI	?:	ROBIN	SON	,											
ASSESSME	NT:															
		'ICAL	ITY F		RE	DUNE	Al	1CY	SCRE	EN:	S			CIL		
	HD	W/FU	NC		A			В			С					
NASA IOA	[ 3	/1R /2R	]	[	P	]		[ P	]	[	P P	]		[	]	*
COMPARE	[	/N	]	[	N	]			]	[		]		[	]	
RECOMMEN	DATI	ONS:	(If	di	ff	eren	ıt	fr	om NA	SA	)					
	[	/	]	[		]			]	[		]	(Al	[ DD/D		ETE)
* CIL RE	TENT	I NOI	RATION	ALE	:	(If	aj	ppl:	icabl	•		DEQUAT		•	]	
REMARKS: UPGRADE CORRESPO															E I	LIKE

IOA CONCURS WITH NASA POST 51L CRIT 3/1R. THE NASA FMEAS DO NOT SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/29/88 RMS-4116 05-6IB-MPM-5		BASELIN	IE [ ]
	RMS/EPD&C 4116 HYBRID RELAY,	, K49		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
דו ד <u>ר</u> ו	LITY REDUI			CIL ITEM
	INC A			
NASA [ 1 /1 IOA [ 1 /1	] [ N ]	[ N ]	[ N ] [ ]	[ X ] * [ X ]
COMPARE [ /	] [N]	[и]	[и]	[ ]
RECOMMENDATIONS	: (If differ	ent from N	IASA)	
[ /	] [ ]	[ ]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	f applicab	ole) ADEQUATI INADEQUATI	E [ ] E [ ]
REMARKS: UNTIMELY OPERAT PHYSICAL DAMAGE POSSIBLY LOSS OFMEAS DO NOT SP FMEAS FOR PORT IOA HAS TWO FME ASSESSMENT PURP ONE NASA FMEA. IOA RECOMMENDS FMEAS INTO ONE 4118, 4120, 412	TO THE RMS/PA F CREW/VEHICLE ECIFY REFERENC AND STARBOARD AS THAT CORRES OSES THE BOTH COMBINING THE (1) FMEA FOR A	YLOADS/ORI COULD RES E DESIGNAT SYSTEMS. POND TO OR IOA FMEAS COMPONENTS	R MOTOR COULD BITER. LOSS BULT. THE NA FORS AND DO THEREFORE, THE NASA POST WERE COMPARTS	D CAUSE OF MISSION AND ASA POST 51L NOT DUPLICATE SINCE IOA DOES, 51L FMEA. FOR ED TO THE SAME

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/15/88 NASA DATA: RMS-4117 BASELINE [ ] 05-6IB-MPM-4 NEW [ X ]						
SUBSYSTEM: MDAC ID:	RMS/EPD&C 4117 HYBRID RELAY, K60						
LEAD ANALYST:	ROBINSON						
ASSESSMENT:							
CRITICALI FLIGHT HDW/FUNG		CY SCREENS B C	CIL ITEM				
NASA [ 3 /1R IOA [ 3 /2R	] [ P ] [	P ] [ P ] P ] [ P ]	[ ] *				
COMPARE [ /N	] [N][	] [ ]	[ ]				
RECOMMENDATIONS:	(If different f	rom NASA)					
[ / ]	) [ ] [	] [ ]	[ ] (ADD/DELETE)				
* CIL RETENTION RA	ATIONALE: (If app	licable) ADEQUAT INADEQUAT	E [ ]				
REMARKS: UPGRADE IOA CRIT TO CORRESPONDING COMMITTED TO CONCURS WITH MESPECIFY REFERENCE	PONENTS FOR PORT NASA POST 51L CRI DESIGNATORS AND	NE IOA FMEAS TO AND STARBOARD SY T 3/1R. THE NAS DID NOT DUPLICAT	INCLUDE LIKE STEMS. A FMEAS DO NOT E FMEAS FOR				
BOTH THE PORT AND IOA HAS TWO FMEAS FOR ASSESSMENT PUR	STARBOARD SYSTEM THAT CORRESPOND	S. THEREFORE, S. TO ONE NASA FMEA	INCE IOA DOES,				

WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD

BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/29/88 RMS-4118 05-6IB-MPM-5		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4118 HYBRID RELAY, K	60		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
FLIGH	ITY REDUNDA T NC A			CIL ITEM
NASA [ 1 /1 IOA [ 1 /1	] [ N ] ] [ ]	[ N ] [	N ]	[ X ] *
COMPARE [ /	] [ N ]	[и][	n ]	[ ]
RECOMMENDATIONS:	(If different	from NASA)	ı	
[ /	] [ ]	[ ] [	] (AI	[ ] DD/DELETE)
	RATIONALE: (If a		ADEQUATE NADEQUATE	
PHYSICAL DAMAGE POSSIBLY LOSS OF FMEAS DO NOT SPE FMEAS FOR PORT A IOA HAS TWO FMEA ASSESSMENT PURPO ONE NASA FMEA. IOA RECOMMENDS OF FMEAS INTO ONE (	ON OF A DEPLOY A TO THE RMS/PAYLO CREW/VEHICLE CO CIFY REFERENCE D ND STARBOARD SYS S THAT CORRESPON SES THE BOTH IOA COMBINING THE COM 1) FMEA FOR ASSE 4, 4124, 4126 AND	ADS/ORBITER OULD RESULT. DESIGNATORS STEMS. THER ID TO ONE NA A FMEAS WERE IPONENTS ON ESSMENT PURI	R. LOSS OF THE NASA AND DO NOT REFORE, SIN ASA POST 50 COMPARED	F MISSION AND A POST 51L I DUPLICATE NCE IOA DOES, 1L FMEA. FOR TO THE SAME

ASSESSME ASSESSME NASA FME	NT D NT I A #:	ATE: D:	1/15/8 RMS-4: 05-61	88 119 B <b>-M</b>	iPN	1-4						ASA DA BASELI N	NE			
SUBSYSTE MDAC ID: ITEM:			RMS/E: 4119 HYBRI			LΑΥ,	K!	51								
LEAD ANA	LYST	:	ROBIN	SON	ſ											
ASSESSME	NT:															
	F	LIGH'				EDUNI	DAI	1CY	SCR	EENS				CIL		
	HD	W/FU	NC		A			В			С					
NASA IOA	[ 3 [ 3	/1R /2R	]	[	P	]		[ P	]	] ]	P P	]		[	]	*
COMPARE	[	/N	]	[	N	]	1	[	]	[		]		[	]	
RECOMMEN	DATI	ons:	(If	di	.f1	fere	nt	fr	om N	(ASA)	)					
	[	/	]	[		]	1	[	]	[		]		[   		TE)
* CIL RE	TENT	ION 1	RATION	ALE	:	(If	aj	ppl	icab	•	1A 1AV	DEQUAT DEQUAT	E E	[	]	
REMARKS: UPGRADE CORRESPO	NDIN	G CO	MPONEN'	rs	FC	OR PO	OR:	( A	ND S	A FI	1EA 30A	AS TO ARD SY	INC	CLUDI EMS.	E L	

IOA CONCURS WITH NASA POST 51L CRIT 3/1R. THE NASA FMEAS DO NOT SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/29/88 RMS-4120 05-6IB-MPM-5		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4120 HYBRID RELAY,	, K51		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
FLIGH	ITY REDUN T			CIL ITEM
·	NC A			
NASA [ 1 /1 IOA [ 1 /1	] [ N ] ] [ ]	[ N ] [ ]	[ N ] [ ]	[ X ] * [ X ]
COMPARE [ /	] [N]	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If differe	ent from N	'ASA)	
[ /	] [ ]	[ ]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	f applicab	ole) ADEQUATE INADEQUATE	
REMARKS: UNTIMELY OPERATI PHYSICAL DAMAGE POSSIBLY LOSS OF FMEAS DO NOT SPE FMEAS FOR PORT A IOA HAS TWO FMEA ASSESSMENT PURPO ONE NASA FMEA. IOA RECOMMENDS OF FMEAS INTO ONE ( 4118, 4120, 4122	TO THE RMS/PAND CREW/VEHICLE CIFY REFERENCE IND STARBOARD SES THAT CORREST COMBINING THE COMBINING T	YLOADS/ORE COULD RES E DESIGNAT SYSTEMS. POND TO ON IOA FMEAS COMPONENTS SSESSMENT	SITER. LOSS SULT. THE NATIONS AND DO NOT THEREFORE, SIE NASA POST WERE COMPARISON THE FOLIST	OF MISSION AND ASA POST 51L NOT DUPLICATE SINCE IOA DOES, 51L FMEA. FOR ED TO THE SAME LOWING IOA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		M-4		NASA DATA BASELIN NE	
SUBSYSTEM:					
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL FLIGH	ITY R	EDUNDA	NCY SCRE	ENS	CIL ITEM
HDW/FU	NC A		В	С	
NASA [ 3 /1R IOA [ 3 /2R	] [ P	]	[ P ] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [ /N	] [ N	]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)	
[ /	] [	]	[ ]	[ ]	[ ] ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If a	pplicabl	e) ADEQUATE INADEQUATE	[ ]
REMARKS: UPGRADE IOA CRIT CORRESPONDING CO	•				

IOA CONCURS WITH NASA POST 51L CRIT 3/1R. THE NASA FMEAS DO NOT SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/29/88 RMS-4122 05-6IB-MPM-5		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4122 HYBRID RELAY, H	<b>K22</b>		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
	ITY REDUNDA			CIL ITEM
HDW/FU	T NC A	В	С	
NASA [ 1 /1 IOA [ 1 /1	] [ N ] ] [ ]	[ N ] [	N ]	[ X ] *
COMPARE [ /	] [N]	[ N ] [	N ]	[ ]
RECOMMENDATIONS:	(If differen	t from NASA		
[ /	] [ ]	[ ] [		[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If		ADEQUATE NADEQUATE	[ ]
FMEAS INTO ONE	TO THE RMS/PAYL F CREW/VEHICLE C ECIFY REFERENCE AND STARBOARD SY	OADS/ORBITE OULD RESULT DESIGNATORS STEMS. THE OND TO ONE N OA FMEAS WER OMPONENTS ON	THE NAS AND DO NO REFORE, SI ASA POST 5 E COMPARED	A POST 51L T DUPLICATE NCE IOA DOES, 1L FMEA. FOR TO THE SAME

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/15/88 RMS-4123 05-6IB-M	i IPM-4		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4123 HYBRID R		K62		
LEAD ANALYST:	ROBINSON	Ī			
ASSESSMENT:					
FLIGH		REDUNDA A	ANCY SCRE	ens C	CIL ITEM
NASA [ 3 /1R IOA [ 3 /2R	] [	P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [ /N	] [	и ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If di	fferent	from NA	SA)	
[ /	] [	]	[ ]	[ ] (	[ ] ADD/DELETE)
* CIL RETENTION	RATIONALE	: (If a	applicabl	e) ADEQUATE	r 1
REMARKS:				INADEQUATE	
UPGRADE IOA CRIT	TO 3/1R	AND COM	MBINE IOA	FMEAs TO I	NCLUDE LIKE
CORRESPONDING COLUMN TO THE SPECIEV PREPRINCE	NASA POS	T 51L (	CRIT 3/1R	. THE NASA	FMEAs DO NO

TC SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	DA II #:	TE:	1/29/ RMS-4 05-63	/88 4124 IB-N	i IPM	<b>1–</b> 5						ASA I BASEI		£	x	]		
SUBSYSTIMDAC ID:	EM:			RMS/I 4124 HYBR			AY,	, K62	2										
LEAD AN	ALY	ST:	;	ROBII	NSO	1													
ASSESSM	ENT	:																	
		FI	TGH	ITY T NC				NDANO								IL TEN			
NASA IOA	[	1	/1 /1	]	]	N	]	[	N	]	[	N	]		[	X	]	*	
COMPARE	[		/	]	C	N	]	[	N	)	[	N	]	•	[		]		
RECOMME	NDA	TIC	ons:	(I	f d:	ifi	fere	ent i	fro	om N	IASA	)							
	[		/	]	[		]	[		]	[		1			/DI		ETE)	
* CIL R		n <b>T</b> ]	ON	RATIO	NAL	E:	(I:	f apı	pl:	icak		<b>2</b> 1	DEQUI	ATE ATE	[		]		
REMARKS UNTIMEL PHYSICA POSSIBL FMEAS D FMEAS F IOA HAS ASSESSM ONE NAS. IOA REC FMEAS I 4118, 4	Y O L D Y L OR TW ENT A F OMM	AMA OSS OT POI O I P( MEA ENI	AGE S OF SPE RT A FMEA URPO A. DS C NE (	TO THE CREW CIFY OF THE CIFY O	E RI /VEI REFI ARBO T CO HE I ING EA I	MS, HIC ERI OAI ORI BOT TI	PAY CLE ENC! RES! TH :	YLOAI COUI E DES SYSTI POND IOA I	DS, LD SIC EM: TC FM:	ORI RES GNAT S. O ON EAS ENTS ENTS	SITE SULT FORS THE NE N. WER	R. Al RE: AS: E	LO: THE ND DO FORE A PO: COMP	SS OI NASA O NOT , SII ST 5: ARED	F 1 A : T : T : WI:	MIS POS DUI E I FI O I	SSI ST PLI PLI IOM EM THI	51L ICATE A DOES A. FO E SAMI	S, OR

ASSESSME ASSESSME NASA FME	NT	ID	<b>):</b>		L25	5 MPN	1-4							ASA DA BASEL:	INE		]
SUBSYSTE MDAC ID:				RMS/EI 4125 HYBRII			LAY,	K	24	ļ							
LEAD ANA	LYS	T:		ROBINS	501	V											
ASSESSME	NT:																
			CAL LIGH	ITY F		RI	EDUNI	)A	NC	Y	SCRI	EENS	5			CIL	
	H	DW	/FUI	NC		A				В			С				
NASA IOA	[	3 3	/1R /2R	]	[	P	]		[	P P	]	[ [	P P	]		[	] <b>*</b> ]
COMPARE	[		/N	]	ι	N	1		[		]	[		]		£	]
RECOMMEN	DAT	'IC	ns:	(If	d:	ifi	ferer	nt	f	r	om NA	ASA)	)				
	[		/	]	[		]		[		]	[		]	(AI	[ D/D	] ELETE)
* CIL RE	TEN	ΤI	ON I	RATION	ALI	€:	(If	aj	pp	11	[cab]	•		DEQUA!			]
REMARKS: UPGRADE CORRESPO												A FI	ME?	As TO	INC	CLUD	E TIKE

IOA CONCURS WITH NASA POST 51L CRIT 3/1R. THE NASA FMEAS DO NOT SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

ASSESSME ASSESSME NASA FME	ENT ENT EA	D. I:	AT D:	E:	1/ RM 05	29/8 S-41 -6IB	38 L26 3 <b>-1</b>	5 IPM	<b>1-</b> 5						BASEI	ATA: LINE NEW	[				
SUBSYSTE MDAC ID: ITEM:					41	26			ΔΑΥ,	K24	ŀ										
LEAD ANA	YLY	ST	:		RO	BINS	501	1													
ASSESSME	ENT	<b>':</b>																			
	CR			AL:				RI	EDUN	DANC	CY	SCR	EENS					LL LEN			
		HD	W/	FU	NC.			A			В			С							
NASA IOA	[	1	/	'1 '1	]		[	N	]	[	N	]	[	N	]		[	X X	]	*	
COMPARE	[		/	•	]		[	N	3	[	N	]	[	N	]		[		]		
RECOMME	NDA	TI	ON	ıs:		(If	<b>d</b> :	ifi	fere	nt i	fro	om N	IASA	)							
	[		/	,	]		[		]	(		]	[		]				ELI ]	ETE ;	) •
* CIL R	ETE	TN	'IC	)N	RAT	ION	AL	E:	(If	apı	<b>91</b> :	icab	ole) I	Al NAI	DEQUA	ATE ATE	[		]		
REMARKS UNTIMELY PHYSICA POSSIBLY FMEAS DO FMEAS FO IOA HAS ASSESSMONE NAS IOA RECO FMEAS I	Y C L E Y I O N OR TW ENT A I	AM LOS IOT PO IO FME MEN	IAC SS PRI FM PUF EA.	SE OF SPE AMEA	TO CR CIF ND S T SES OME	THE EW/Y RI STAI HAT THE SINII	RI VE: RB: C: E NG	MS, HIC ERI OAI ORI BO' TI	/PAY CLE ENCE RD S RESF TH I HE C R AS	COMPOSES	DS, LD SI( EM: FM! ON!	ORE RES GNAT S. O ON EAS ENTS	SITE: SULT CORS THE: NE N. WER	R. Al REI ASI E	LOS THE ND DO FORE A POS COMPS	SS 01 NASA NOT ST 51 ARED	YI	MI: PO: DU! E : F! O '	SSI ST PLI IOMEN THI	51: ICA' A DO A. E S	L PE DES, FOR
4118, 4	120	),	4]	122	, 4	124	,	4 L	26 A	עט י	4 I.	28.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/15/88 RMS-4127 05-6IB-N	7 MPM-4			ATA: INE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8	&C			
LEAD ANALYST:	ROBINSON	Ŋ			
ASSESSMENT:					
CRITICAL FLIGH	ITY	REDUND	ANCY SC	REENS	CIL ITEM
	NC	A	В	С	TTEM
NASA [ 3 /1R IOA [ 3 /2R	] [	P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [ /N	] [	и ј	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If di	ifferen	t from 1	NASA)	
[ /	] [	]	[ ]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE	E: (If	applical	ADEQUA'	
REMARKS:				INADEQUA'	
UPGRADE IOA CRIT CORRESPONDING CO					
IOA CONCURS WITH	NASA POS	ST 51L	CRIT 3/		

ОТ SPECIFY REFERENCE DESIGNATORS AND DID NOT DUPLICATE FMEAS FOR BOTH THE PORT AND STARBOARD SYSTEMS. THEREFORE, SINCE IOA DOES, IOA HAS TWO FMEAS THAT CORRESPOND TO ONE NASA FMEA. FOR ASSESSMENT PURPOSES THE BOTH PORT AND STARBOARD IOA FMEAS WERE COMPARED TO THE EQUIVALENT NASA FMEA SINCE THE EFFECT WOULD BE THE SAME WHETHER IT BE A PORT OR A STARBOARD FAILURE.

ASSESSME ASSESSME NASA FME	NT NT A	DA II	TE:	1/29 RMS- 05-6	/88 4128 IB-l	B MPN	<b>1-</b> 5					N2	ASA I BASEI	DATA LINE NEW	: [ [	x	]		
SUBSYSTE MDAC ID: ITEM:	M:			RMS/ 4128 HYBR			LAY,	, K50	)										
LEAD ANA	LYS	ST:	:	ROBI	NSOI	N													
ASSESSME	NT:	3																	
		FI	LIGH	LITY				ND <b>A</b> N			REENS					IL PEM			
	ŀ	IDW	/FU	JNC		A			В			С							
NASA IOA	[ [	1	/1 /1	]	[	N	]	[ [	N	]	[ [	N	]		]	X X	]	*	
COMPARE	[		/	]	[	N	]	[	N	]	[	N	]		[		]		
RECOMMEN	DAT	ric	)NS:	: (I	f d	if	fere	ent i	fro	om N	IASA)	)							
	[		/	1	[		]	[		]	[		]	(A		/DE		ETE)	
* CIL RE	TEI	T	ON	RATIO	NAL	E:	(I:	f app	<b>)</b> 1:	icak	ole) II	A A	DEQUA DEQUA	ATE ATE	[		]		
REMARKS: UNTIMELY PHYSICAL POSSIBLY FMEAS DO FMEAS FO IOA HAS ASSESSME ONE NASA IOA RECO FMEAS IN 4118, 41	OI DI DI DI DI DI DI DI DI DI DI DI DI DI	AMA OSS OT POI PU MEA ENI	AGE S OI SPI RT I FMEI JRPO A. OS O	TO TH F CREW ECIFY AND ST AS THA DSES T COMBIN (1) FM	E RI /VEI REF: ARBO T CO HE ING EA	MS, HIC ERI OAI ORI BO: TI	/PAYCLE ENCI ENCI RD S RESI TH : HE G R AS	YLOAI COU! E DES SYST! POND IOA ! COMPO	DS, LD SI( EM: T( FM)	ORE RESENATES. O ON EAS ENTS	SITEI SULT TORS THEI NE NA WERI	R. Al REI ASI	LO: THE ND DO FORE A PO: COMP.	SS O NAS O NO , SI ST 5 ARED	F IA INCI	MIS POS DUI E I FN O I	SSI ST PLI IOA MEA THE	CAI A DC A. E SA	E ES, FOR

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	DMC_412	30	1	ASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4129 HYBRID	D&C DRIVERS, A	R9, 11		
LEAD ANALYST:	ROBINSC	ИС			
ASSESSMENT:					
CRITIC FLI HDW/	SHT		Y SCREENS B C		CIL ITEM
NASA [ 3 / IOA [ 3 /	3 ] [ 3 ] [	[ N ]	и] [и	]	* [ ]
COMPARE [ /	] [	[и]	и ] [и	]	[ ]
RECOMMENDATION	S: (If d	lifferent f	rom NASA)		
[ /	] [	] [	] [		[ ] DD/DELETE)
* CIL RETENTIO	N RATIONAL	LE: (If app	Al	DEQUATE DEQUATE	[ ]
REMARKS: NO ISSUE. ONE RELATIVE TO FA PROVIDED ERRON MODE RELATIVE IN CONSIDERATI FMEA DOES NOT INDIVIDUAL IOA	LURE OF TEOUS INDICE TO EACH INDICE TO THAT THE REQUIRE AS	THE TOTAL I CATION. IO VDIVIDUAL O HE CRITICAL SSESSMENT.	A FMEAS AND OMPONENTS I ITIES INVOI	CIRCUIT S ALYZED TH IN THE CI LVED ARE	UCH THAT IT IE FAILURE RCUIT.

ASSESSME ASSESSME NASA FME	SSESSMENT DATE: 1 SSESSMENT ID: 1 IASA FMEA #: 0							) IPM	i <b>-</b> 10	)								ELI		: [ ;				
	EM:				RM 41	S/EF	D8	(C						11										
LEAD ANA	ALYS	ST	:		RO	BINS	01	I																
ASSESSME	ENT	:																						
		FI	LIC	GHT	•				DUI	IADN		Y B	sc	CREE	:NS	s c				CI:				
NASA IOA			•						]		[	N	]		[	N	]			[	]	7	<b>t</b>	
COMPARE	[		/		]		[	N	]		[	N	]		•	N	]			[	]			
RECOMME	NDA!	ri	ON	s:		(If	d:	ifí	ere	ent	f	ro	m	NAS	SA)	)								
	[		/		]		[		1		[		]		[		]		(A		DEL		ΓE)	
* CIL R	ETE!	NT:	10	N F	TAS	'ION <i>I</i>	ΑL	E:	(I:	f a	pp	<b>1</b> i	ica	able	<b>≥)</b> I]	IA IAN	DEQ DEQ	UAT UAT	CE CE	[	]			
REMARKS NO ISSUI RELATIVE PROVIDE MODE RE IN CONS FMEA DO INDIVID	E. E T D E LAT IDE ES	O RR IV RA NO	FA ON E TI T	ILU EOU TO ON RE(	JRE JS EA TH QUI	OF IND CH AT TRE	TI CZ [N]	HE AT: DI'	TOT NOI IDIV	TAL UAL	IO IO O	NI A Ol	DIC FI MPC	CATI MEAS ONEN	[O] S VT: FN	N (ANZ S : S :	CIR ALY IN LVE	CUI ZEI THI	IT O T E C ARE	SUC HE IRC AL	H T FAI UIT L 3	H	URE	THE

ASSESSMENT ASSESSMENT NASA FMEA	r D r I #:	ATE: D:	1/19 RMS- 05-6	/88 ·41: IB-	3 3 1 -MP	M-10	)						DATA ELINE NEW		]		
SUBSYSTEM: MDAC ID: ITEM:	:		RMS/ 4131 HYBR	EPI	J&C					15							
LEAD ANALY	YST	•	ROBI	NSC	NC												
ASSESSMENT	r:																
CI	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																
MAGA		•				7	r		,			,		-	,		
NASA   IOA	[ 3	/3	]			]	[	14	]	[	N	]		[	]	*	
COMPARE [	[	/	]	(	N	]	[	N	]	[	N	]		[	]		
RECOMMENDA	ATI	ons:	(I	fć	lif:	fere	ent i	fro	om N	ASA	)						
Į	[	/	1	(	•	]	[		]	[		3	(A)	[ DD/D		ETE)	
* CIL RETE	ENT:	ION 1	RATIO	NAI	Œ:	(If	app	<b>91</b> i	icab	•	IA IAN	DEQU DEQU	IATE IATE	[	]		
REMARKS: NO ISSUE.	01	NE PO	OST 5	1L	NAS	SA F	MEA	AN	JA L.Y	ZED	ጥፑ	a ai	וונדדמי	RE M	ODE		
RELATIVE T	ro 1	FAIL	JRE O	F T	'HE	TOT	AL ]	ENI	DICA	TIO	1 (	CIRC	UIT :	SUCH	TH	IAT :	ſΤ
PROVIDED E	ERRO	ONEOU E TO	JS IN EACH	IN	AT.	LON. ZIDU	IC AL C	DA CON	FME IPON	AS A Ents	ANA S	ALYZ IN T	ED TI	HE F	AII TT.	URE	
IN CONSIDE	ERA!	rion	THAT	TH	IE (	CRIT	ICAI	נוב	CIES	INV	<i>7</i> 0I	LVED	ARE	ALL	3/	3, 5	THE
FMEA DOES INDIVIDUAL				AS	SES	SSME	NT.		IOA	REC	COM	IMEN	DS C	OMBI	NIN	IG TI	ΙE

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	DA II	ATE:	1/: RM: 05:	19/8 5-41 -6IE	8 .32 3-M	e 1PM	<b>-1</b> 0						ASA DAT BASELIN NE	E	[ ]	•		
SUBSYSTI MDAC ID: ITEM:				41:	32			VER	s, P	LR1	13,	15							
LEAD ANA	ALY	3 <b>T</b> :	:	RO	BINS	(O	1												
ASSESSMI	ENT	:																	
	CR.		[CAL LIGH				RE	DUN	DANG	CY	SCF	REENS	5			CII			
	1		/FU				A			В			С						
NASA IOA	[	3 3	/3 /3	]		[	N	]	[ [	N	]	[ [	N	]		[	]	*	
COMPARE	[		/	]		[	N	]	[	N	]	[	N	]		[	]		
RECOMME	NDA'	TI(	ons:		(If	d:	ifi	fere	nt :	fro	om 1	NASA)	)						
	[		/	]		[		3	[		]	[		] (	ΆΙ		DEI	ETE	<b>:)</b>
* CIL R	ETE:	NT:	ION	RAT	ION?	<b>A</b> LI	E:	(If	ap	<b>01</b>	ical			DEQUATE DEQUATE			]		
REMARKS NO ISSU RELATIV PROVIDE MODE RE IN CONS FMEA DO	E. E T D E LAT	O : RR( IV: RA'	FAII ONEC E TO	URE US EA	OF IND: CH :	TI ICA INI IHI	HE AT: DIV	TOT ION. VIDU	IAL IO	INI OA COI LI'	DICA FMI MPOI TIES	ATIO EAS NENT S IN	N ( ANZ S : VO:	CIRCUIT ALYZED IN THE LVED AF	TH CI	SUC HE ERC AL	H T FAI UIT L 3	HAT LUF	RE THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4133 05-6IB-MPM-10	NASA DAT BASELIN NE	
SUBSYSTEM:			
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUND	DANCY SCREENS	CIL ITEM
HDW/FU	NC A	В С	TIEM
NASA [ 3 /3 IOA [ 3 /3	] [ ]	[ N ] [ N ] [ ] [ ]	[ ] *
COMPARE [ /	] [ N ]	[и] [и]	[ ]
RECOMMENDATIONS:	(If differen	nt from NASA)	
[ /	] [ ]	[ ] [ ] (	[ ] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[ ]
RELATIVE TO FAIL PROVIDED ERRONEO MODE RELATIVE TO IN CONSIDERATION	URE OF THE TOTA US INDICATION. EACH INDIVIDUA THAT THE CRITI	MEA ANALYZED THE FAIL AL INDICATION CIRCUIT IOA FMEAS ANALYZED AL COMPONENTS IN THE ICALITIES INVOLVED AR	URE MODE SUCH THAT IT THE FAILURE CIRCUIT. E ALL 3/3, THE
FMEA DOES NOT RE	QUIRE ASSESSMEN	NT. IOA RECOMMENDS	COMBINING THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4134 05-6IB-M	IPM-10			NASA DATA: BASELINE NEW		]
	RMS/EPD& 4134 HYBRID D		AR8	3, 10			
LEAD ANALYST:	ROBINSON	Ī					
ASSESSMENT:							
	ITY	REDUNDA	NCY	SCREENS	5	CIL ITEM	ı
FLIGH HDW/FU	nc nc	A	В		С		•
NASA [ 3 /3 IOA [ 3 /3	] [	N ]	( N	] [	N ]	[	] * ]
COMPARE [ /	] [	и ј	[ И	] [	N ]	[	]
RECOMMENDATIONS:	(If di	ifferent	fro	om NASA	)		
[ /	] [	]	[	] [	] (Al	[ DD/DE	] ELETE)
* CIL RETENTION	RATIONALI	E: (If a	pp1:	icable) I	ADEQUATE NADEQUATE	[	]
REMARKS: NO ISSUE. ONE PRELATIVE TO FAIL PROVIDED ERRONED MODE RELATIVE TO IN CONSIDERATION FMEA DOES NOT RE	URE OF THE OF TH	HE TOTAL ATION. DIVIDUAL E CRITIC	INI IOA COI ALI	DICATIO FMEAS MPONENT TIES IN	N CIRCUIT ( ANALYZED T) S IN THE C VOLVED ARE	SUCH HE F <i>I</i> IRCU] ALL	THAT IT AILURE IT. 3/3, THE

ASSESSME ASSESSME NASA FME	ENT ENT EA	D I #:	ATE:	1, RI 0!	/19/ //S-4 5-6I	88 13 B-	5 MP	M-10						ASA 1 BASE1	LINE		]		
SUBSYSTE MDAC ID:	:M:			RI 4:	MS/E 135	PD	&C	IVERS											
LEAD ANA	LY	ST	:	R	DBIN	SO	N												
ASSESSME	NT	:																	
		F	LIGH	ΙΤ				EDUNI	NAC		SC		s C			CIL			
										В									
NASA IOA	[	3	/3	]		[	N	]	[	N	]	]	N	]		[	]	*	
COMPARE	[		/	]		[	N	]	[	N	]	[	N	]		[	]		
RECOMMEN	'DA'	ΓI	ons:		(If	đ:	if	feren	nt	fro	om l	NASA)	)						
	[		/	]		[		]	[		]	[		]		[ D/D		TE)	
* CIL RE	TE	NT	ION	RAI	NOI	ALI	3:	(If	ap	pli	ical		ΑI	EQUA	<b>ATE</b>	[	]		
REMARKS:												I	IA	EQUA	ATE	į	j		
NO ISSUE RELATIVE PROVIDED	T(	O RR	FAII ONEC	URE US	OF	TI IC	IE \T]	TOTA	L I	INI OA	ICA FMI	ATION EAs <i>P</i>	NA ANA	IRCU	JIT S	SUCH IE F.	TH AIL	AT I	T
MODE REL IN CONSI	DE	RA'	TION	TH	IAT :	PHI	2 (	CRITI	CA	LII	'IES	/NI	70I	VED	ARE	ALL	3/	3, I	'HI
FMEA DOE	S 1	4O	T RE	QUI	RE A	ASS	SES	SSMEN	T.	-	IO	A REC	COM	MEND	S CC	MBI	NIN	G TH	ΙE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4136	<b>1-</b> 10		NASA DATA: BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4136 HYBRID DR	IVERS, A	R12, 14			
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICAL: FLIGH	r	EDUNDANC			CIL ITEM	I
HDW/FU	NC A		В	С		
NASA [ 3 /3 IOA [ 3 /3	] [ N	] [	] [ N	N ]	[	] <b>*</b> ]
COMPARE [ /	] [ N	] [	и] [	ן א ן	[	]
RECOMMENDATIONS:	(If dif	ferent f	rom NASA	7)		
[ /	] [	] [	] [	[ ] (AI	[ DD/DE	] :LETE)
* CIL RETENTION	RATIONALE:	(If app		ADEQUATE NADEQUATE	]	]
REMARKS: NO ISSUE. ONE P RELATIVE TO FAIL PROVIDED ERRONEO	URE OF THE	TOTAL I	ANALYZEI NDICATIO	THE FAILU	RE MO	THAT IT

INDIVIDUAL IOA FMEAS.

MODE RELATIVE TO EACH INDIVIDUAL COMPONENTS IN THE CIRCUIT.

IN CONSIDERATION THAT THE CRITICALITIES INVOLVED ARE ALL 3/3, THE FMEA DOES NOT REQUIRE ASSESSMENT. IOA RECOMMENDS COMBINING THE

ASSESSME ASSESSME NASA FME	NT ID		MS-41	L37	<b>M-</b> 10				NASA DAT BASELII NI		
SUBSYSTEMDAC ID:	M:	_	137		IVERS	s, AR	14, 1	8			
LEAD ANA	LYST:	R	OBINS	ON							
ASSESSME	NT:										
•	CRITI	CALIT IGHT	Y	R	EDUNI	DANCY	SCRE	ENS		CII	_
		/FUNC		A		В			С	ITI	5M
NASA IOA	[ 3 ,	/3 ] /3 ]		[ N	]	[ N	]	[	N ]	[	] <b>*</b>
COMPARE	[ ,	/ ]		[ N	]	[ N	]	[	N ]	[	]
RECOMMEN	DATIO	NS:	(If	dif	ferer	nt fr	om NA	SA)			
	[ ,	/ ]		[	]	[	]	[	]	[ (ADD/I	] DELETE)
* CIL RE	renti(	ON RA	TIONA	LE:	(If	appl	icabl		ADEQUATI ADEQUATI		] .
KEMAKAS:											

NO ISSUE. ONE POST 51L NASA FMEA ANALYZED THE FAILURE MODE RELATIVE TO FAILURE OF THE TOTAL INDICATION CIRCUIT SUCH THAT IT PROVIDED ERRONEOUS INDICATION. IOA FMEAS ANALYZED THE FAILURE MODE RELATIVE TO EACH INDIVIDUAL COMPONENTS IN THE CIRCUIT. IN CONSIDERATION THAT THE CRITICALITIES INVOLVED ARE ALL 3/3, THE FMEA DOES NOT REQUIRE ASSESSMENT. IOA RECOMMENDS COMBINING THE INDIVIDUAL IOA FMEAS.

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	D: 1:	ATE	: 1/19 RMS- 05-6	/88 ·4138 SIB-M	PM	-10							DATA LINE NEW				
SUBSYSTI MDAC ID: ITEM:	EM:				EPD&	С					18							
LEAD AN	ALY	ST	:	ROB1	NSON													
ASSESSMI	ENT	:																
	CR			LITY		RE	DUN	DAN	CY	SCI	REEN	S			CII			
		_	LIG W/F	UNC		A			В			С						
NASA IOA	]	3	/3 /3	]	[	N	]	[	N	]	[	N	]		[	]	*	
COMPARE	[		/	]	[	N	]	[	N	]	[	N	]		[	]		
RECOMME	NDA	ΤI	ons	: (:	[f di	ff	ere	nt	fr	om I	NASĄ	)						
	[		/	]	[		J	•		]	[		]	(A	[ \DD/I	) DELI	ETE)	
* CIL R	ETE	TN	ION	RATIO	ONALE	::	(If	ap	pl:	ica		Al NA	DEQU DEQU	JATE JATE	[	]		
REMARKS NO ISSU RELATIV PROVIDE MODE RE IN CONS FMEA DO INDIVID	E. E T D E LAT IDE ES	O RR IV RA NO	FAI ONE E T TIO T R	LURE (COUS II) O EACTON THAT	OF TH NDICA H IND T THE E ASS	IE ATI OIV	TOT ON. UDU TTRE	AL IAL ICA	IN OA CO LI'	DIC FM MPO TIE	ATIO EAS NENT S IN	n An S Vo	CIRO ALYZ IN Z LVEI	CUIT ZED I THE C D ARE	SUCHE I CIRCU E ALI	H TH FAII JIT . L 3,	HAT LURE /3,	THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		PM-10		ASA DATA: BASELINE NEW								
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4139 HYBRID DR	: RIVERS, ARG	5, 8									
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C												
HDW/FU	NC A	В	С									
NASA [ 3 /3 IOA [ 3 /3	] [ N	] [ N	] [ N	]	[ ]	*						
COMPARE [ /	] [ N	и] [и	] [ N	1	[ ]							
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)									
[ /	]. [	] [	] [	] (AD	[ ]							
* CIL RETENTION	RATIONALE:	(If appli	•	EQUATE	[ ]							
DEWI DVC .			INAL	EQUATE								
REMARKS: NO ISSUE. ONE P	OST 51L NA	SA FMEA AN	ALVZED TE	IR FATLIR	F MOD	F						
RELATIVE TO FAIL	URE OF THE	TOTAL IND	ICATION C	CIRCUIT S	UCH T	HAT IT						
PROVIDED ERRONEO												
MODE RELATIVE TO IN CONSIDERATION												
FMEA DOES NOT RE	QUIRE ASSE		IOA RECOM									
INDIVIDUAL IOA F	MEAs.											

	ASSESSMENT DATE: 1/19/88 ASSESSMENT ID: RMS-4140 NASA FMEA #: 05-6IB-MPM-10 SUBSYSTEM: RMS/EPD&C													DATA: LINE NEW	[		
SUBSYSTE MDAC ID:				4140			[VE]	RS, Z	AR	5, 8	8						
LEAD ANA	LYS	T:		ROBI	NSO!	N											
ASSESSME	NT:																
CRITICALITY REDUNDANCY SCREENS CIL ITEM																	
	H			С		A			В			С					
NASA IOA	]	3 / 3 /	'3 '3	]	[	N	]	[ [	N	]	[	N	]		[	] * ]	
COMPARE	[	/	•	]	[	N	]	(	N	]	(	N	]		[	]	
RECOMMEN	DAT	ION	is:	(I	f d	if	fer	ent	fr	om I	NASA	)					
	[	/	,	]	[		]	[		]	ĵ		]	(A	[ DD/I	] ELET	E)
* CIL RE	TEN	TIC	N R	ATIC	NAL	E:	(I	f ap	pl:	ica	ble)	•	25011	3 M TO	•	,	
									•		I			ATE ATE	-	]	
REMARKS: NO ISSUE RELATIVE PROVIDED MODE REI	TO	RON	ILU IEOU	RE C	F T	HE AT	TO ION	TAL . I	IN OA	DIC. FM	EAs .	N ( AN	CIRC ALYZ	UIT ED T	SUCF HE F	I THA FAILU	T II

IN CONSIDERATION THAT THE CRITICALITIES INVOLVED ARE ALL 3/3, THE FMEA DOES NOT REQUIRE ASSESSMENT. IOA RECOMMENDS COMBINING THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4141 05-6IB-MPM-10	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4141 HYBRID DRIVERS, AR	12, 16	
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUNDANCY	SCREENS	CIL ITEM
	NC A B	C	TILM
NASA [ 3 /3 IOA [ 3 /3	] [N] [N ] []	] [ N ]	[ ] * [ ]
COMPARE [ /	] [N] [N	] [N]	[ ]
RECOMMENDATIONS:	(If different fro	om NASA)	
[ /	] [ ] [	] [ ] (AD	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If appl.	icable) ADEQUATE INADEQUATE	[ ]
RELATIVE TO FAIL PROVIDED ERRONEOU MODE RELATIVE TO IN CONSIDERATION	EACH INDIVIDUAL CONTRACT THE CRITICALITY QUIRE ASSESSMENT.	NALYZED THE FAILUR DICATION CIRCUIT S FMEAS ANALYZED TH MPONENTS IN THE CI FIES INVOLVED ARE	RE MODE SUCH THAT IT SE FAILURE SRCUIT. ALL 3/3, THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	D10 4140		NASA DATA BASELINE NEW		
	RMS/EPD&6 4142 HYBRID D		AR12, 16	5	
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL: FLIGH		REDUNDA	NCY SCRE	ens	CIL ITEM
	NC .	A	В	С	
NASA [ 3 /3 IOA [ 3 /3	] [	N ]	[ N ] [ ]	[ N ] [ ]	[ ] *
COMPARE [ /	] [	N ]	[и]	[ N ]	[ ]
RECOMMENDATIONS:	(If di	fferent	from NA	SA)	
[ /	] [	1	[ ]	[ ] (A	[ ] .DD/DELETE)
* CIL RETENTION	RATIONALE	: (If a	pplicable	e) ADEQUATE	[ ]
				INADEQUATE	
REMARKS: NO ISSUE. ONE P RELATIVE TO FAIL PROVIDED ERRONEO MODE RELATIVE TO	URE OF TH US INDICA	E TOTAL	INDICAT	s analyzed T	SUCH THAT IT THE FAILURE

IN CONSIDERATION THAT THE CRITICALITIES INVOLVED ARE ALL 3/3, THE FMEA DOES NOT REQUIRE ASSESSMENT. IOA RECOMMENDS COMBINING THE

INDIVIDUAL IOA FMEAS.

ASSESSME ASSESSME NASA FME	NT NT A	D I #:	AI D:	E:	E: 1/19/88 RMS-4143 05-6IB-MPM-10								NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTE MDAC ID:	M				4 1	MS/EPD&C 143 YBRID DRIVERS, AR2, 4														
LEAD ANA	LY	ST	:		R	BIN	SOI	N												
ASSESSME	NT	:																		
		F	LI	GH	T	?				IDAN	CY	SCI					CI:			
		HD	W/	'FU	NC			A			В			С						
NASA IOA	[	3	/	'3 '3	]		[	N	]	]	N	]		N	]		[ [	]	*	
COMPARE	[		/	,	]		[	N	]	[	N	]	ĺ	N	]		[	)		
RECOMMEN	DA'	TI	ON	ıs:		(If	d:	ifi	fere	ent	fr	om 1	NASA	١)						
	[		/	•	]		[		]	[		]	(	•	]	(A		] DELE	ETE)	
* CIL RE	TE	NT	10	N	RAI	NOI	ALI	€:	(If	ap	pl:	ical	•		DEQU	ATE ATE	[ r	]		
REMARKS: NO ISSUE RELATIVE PROVIDED MODE REL IN CONSI	TO E AT DE	O RR IV RA	FA ON E TI	IL EO TO ON	URE US EA TH	OF IND: CH AT	TH IC! IN! TH!	TI SIV	TOI ON. VIDU CRII	TAL IAL TICA	INI OA COI LI'	POICA FMI POI PIES	YZEI ATIC EAS NENT	TI ON ( ANA SS ]	HE F. CIRC ALYZ IN T. LVED	AILUI UIT : ED TI HE C: ARE	RE I SUCI HE I IRCU ALI	MODE H TH FAII JIT. L 3/	IAT JURE	THI
FMEA DOE	<b>3</b>	NO	T.	KE	ΛΩΤ	KE A	HOS	) E.	OME	TM.L.		TO	A KE	CON	MEN	DS C	OMB.	<b>TNTV</b>	IG T	HE

INDIVIDUAL IOA FMEAS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-414			NASA DATA BASELINE NEW	
	RMS/EPD 4144 HYBRID		, AR2, 4		
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL		REDUNDA	ANCY SCRE	ENS	CIL ITEM
FLIGH HDW/FU	NC	A	В	С	
NASA [ 3 /3 IOA [ 3 /3	] [	и ] ]	[ N ] [ ]	[ N ]	[ ] *
COMPARE [ /	] [	<b>N</b> ]	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If d	ifferen	t from NA	SA)	
[ /	] [	1	[ ]	[ ] (A)	[ ] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	[ ]
REMARKS: NO ISSUE. ONE P RELATIVE TO FAIL PROVIDED ERRONEO MODE RELATIVE TO	URE OF TOUS INDIC	HE TOTA	L INDICAT IOA FMEA	ED THE FAILU ION CIRCUIT S ANALYZED T	JRE MODE SUCH THAT IT THE FAILURE

IN CONSIDERATION THAT THE CRITICALITIES INVOLVED ARE ALL 3/3, THE

FMEA DOES NOT REQUIRE ASSESSMENT. IOA RECOMMENDS COMBINING THE INDIVIDUAL IOA FMEAS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•	; -6-2616-	-1	NASA DATA BASELINE NEW	[ X	]						
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4145 CIRCUIT	·										
LEAD ANALYST:	ROBINSON	ī										
ASSESSMENT:												
CRITICAI FLIGH		REDUNDAN	ICY SCREI	ens	CIL	-						
HDW/FU		A	В	С	ITEM	1						
NASA [ / IOA [ 3 /2R	] [	] [	NA]	[ ] [ NA]	[	] *						
COMPARE [ N /N	] [	] [	ן א	[ N ]	[	]						
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)								
[ /	] [	] [	1	[ ] (A	[ DD/DE	] ELETE)						
* CIL RETENTION	RATIONALE	: (If ap	plicable	•	_							
				ADEQUATE INADEQUATE		]						
THIS COMPONENT I	REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5968. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS											

OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSMENT DATE: 1/19/88  ASSESSMENT ID: RMS-4146  NASA FMEA #: EPD&C 05-6-2616-2  NEW [ ]											
SUBSYSTEM: MDAC ID: ITEM:		RMS/EF 4146 CIRCUI		REAKEI	R, CE	32					
LEAD ANALYST	<b>':</b>	ROBINS	ON								
ASSESSMENT:											
	ICAL		RI	EDUND?	ANCY	SCREE	ens		CIL	ſ	
		NC	A		В		С			-	
NASA [ IOA [ 3	/3	]	[	]	[	]	[	]	[	]	*
COMPARE [ N	/N	]	[	]	[	]	[	]	[	]	
RECOMMENDATI	ons:	(If	dif	feren	t fro	om NAS	SA)				
[	/	]	[	]	[	]	[	] (A	[ DD/DI		TE)
* CIL RETENT	NOI!	RATION	ALE:	(If a	appl:	icable	Al	DEQUATE DEQUATE		]	
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5969. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	L	NASA DATA: BASELINE NEW	[ X	]		
	RMS/EPD&C 4147 CIRCUIT BE	REAKER,	СВ7			
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICAL: FLIGHT		EDUNDANC	CY SCREE	ns C	CIL	Ī
HDW/FOI	NC A		В	C		
NASA [ / IOA [ 3 /2R	] [	] [	NA]	[ ] [ NA]	[	] *
COMPARE [ N /N	J [	] [	n j	[и]	[	]
RECOMMENDATIONS:	(If diff	ferent f	rom NAS	A)		
[ /	] [	] [	]		[ DD/DE	] LETE)
* CIL RETENTION H	PATTONALE:	(If ann	nlicable	١		
		(11 app		ADEQUATE	[	]
REMARKS: DISREGARD THIS ICTHIS COMPONENT IS SYSTEM AND SHOULD	FART OF	THE EPD8	C PAYLO	AD BAY MECHA	ANICA	L POWER

OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4148 EPD&C 05-	[ X ]	]			
SUBSYSTEM: MDAC ID: ITEM:	4148	BREAKER, C	B7			
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICALI FLIGHT		REDUNDANCY	SCREENS	•	CIL ITEM	
HDW/FU		В		С		
NASA [ / IOA [ 3 /3	] [	] [	] [		[	
COMPARE [ N /N	] [	] [	] [	3	[	]
RECOMMENDATIONS:	(If di	fferent fr	om NASA)			
[ /	] [	] [	] [	] (A	[ DD/DE	
* CIL RETENTION	RATIONALE	: (If appl		ADEQUATE NADEQUATE		]
REMARKS: DISREGARD THIS IS THIS COMPONENT IS SYSTEM AND SHOUL OF THE FAILURE A	S PART OF D BE ANALY	THE EPD&C YZED WITH	PAYLOAI REGARDS	BAY MECH TO THE TO	ANICA TAL E	L POWER FFECTS

ASSESSMEN ASSESSMEN NASA FMEA												
SUBSYSTEM MDAC ID:		4149	MS/EPD&C 149 CIRCUIT BREAKER, CB12									
LEAD ANAI	LYST:	ROBINSON										
ASSESSMEN	NT:											
C	CRITICAL		RE	DUNDA	NCA	SCREI	ENS	<b>3</b>	CIL			
	FLIGHT HDW/FU		A		В			С	ITE	M		
NASA IOA	[ / [ 3 /2R	]	[ [	]	[ N	] A]	[	] NA]	[	] * ]		
COMPARE	[ N /N	]	[	]	[ N	]	[	n j	[	]		
RECOMMEN	DATIONS:	(If	diff	erent	fr	om NAS	5A)					
	[ /	]	[	]	[	]	[	] (2	[ ADD/D	] ELETE)		
* CIL RET	PENTION 1	RATIONA:	LE:	(If a	ppl:	icable	-	ADEQUATE IADEQUATE		]		
REMARKS:	י שמוכ די	A EMEX	A NIT	DEFE	יום כדי	) TO	E-M	IEN EDDEC.	_6220			

DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-6330. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	NT I	DATE ID: :	: 1/19 RMS- EPD8	9/88 -4150 &C 05-	6-26	15-2		NAS BA	SA DATA ASELINE NEW			
SUBSYSTE MDAC ID: ITEM:			RMS/ 4150 CIRO	/EPD&C CUIT B								
LEAD ANA	LYS	r:	ROB	INSON								
ASSESSME	ENT:											
		TICA FLIG		F	EDUN	DANCY	SC	REENS		CIL		
			UNC	A		В		С				
NASA IOA	[ :	/ 3 /3	]	[ [	]	[	]	[	]	[	]	*
COMPARE	[ ]	n /n	]	[	]	[	]	[	]	[	)	
RECOMMEN	NDAT:	IONS	3: (i	If dif	fere	ent fr	om :	NASA)				
	[	/	]	[	]	[	]	[	] (A	[ DD/I		TE)
* CIL RI	ETEN	TION	RATI	ONALE:	(If	appl	ica	ble) AD INAD	EQUATE EQUATE	[	]	
THIS CON	EMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-6331. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.											

ASSESSME ASSESSME NASA FME		_	_		1/19/88 NASA DAT. RMS-4151 BASELIN EPD&C 05-6-2614-1 NE									]	
SUBSYSTE MDAC ID:				4151	MS/EPD&C 151 IRCUIT BREAKER, CB3										
LEAD ANA	EAD ANALYST: ROBINSON														
ASSESSME	NT	:													
		F	ICAL: LIGH' W/FU		R: A		AN	CY B	s	CREEN	s c		CIL		
											Ĭ				
NASA IOA	[	3	/ /2R	]	[	]	[	N.	] A]	[	NZ	] A]	[	]	*
COMPARE	[	N	/N	]	[	]	(	N	]	[	N	]	[	]	
RECOMMEN	DA'	TI(	ons:	(If	dif:	feren	t	fr	o <b>m</b>	NASA	)				
	[		/	]	[	]	[		]	ĺ		] (A	[ .DD/D:	ELI	ETE)
* CIL RE	TE:	NT:	ION 1	RATIONA	ALE:	(If	aŗ	<b>p1</b> :	ica	able)					
ADEQUATE [ ] INADEQUATE [ ]															
THIS COM	REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5970. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWE SYSTEM AND SHOULD BE ANALYZED WITH PECAPOS TO THE TOTAL EFFECTS														

OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	NT	I	<b>):</b>	]	1/19/8 RMS-4: EPD&C		-6-26	ASA DA BASELI 1		[ X	]				
SUBSYSTE MDAC ID: ITEM:					RMS/E 4152 CIRCU			ER, CI	33						
LEAD ANA	LY	ST	:	:	ROBIN	SON									
ASSESSME	NT	:													
	CR		ICA LIG			1	REDUN	DANCY	SC	REENS			CIL		
	1				С	1	A	В		С					
NASA IOA	[	3	/3	i	]	[	]	[	]	[	]		[	]	*
COMPARE	[	N	/N	ſ	]	[	]	[	]	[	]		[	]	
RECOMMEN	IDA	TI	ONS	:	(If	di	ffere	nt fr	om	NASA)					
	[		/		]	(	1	[	]	[	3	(A)	[ DD/D	ELI	ETE)
* CIL RE	ETE	NT:	ION	I R	ATION	ALE	: (If	appl	ica				_	_	
										INA	DEQUA' DEQUA'	TE TE	[	]	
DISREGAR THIS CON	REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5971. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.														

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	2012										
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4153 CIRCUIT B	<u>-</u>									
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL		EDUND	ANCY SCRE	ENS	CIL						
FLIGH HDW/FU			В	С	ITEM						
NASA [ / IOA [ 3 /2]	] [	]	[ ] [ NA]	[ NA]	[ ] *						
COMPARE [ N /N	] [	]	[ N ]	[ N ]	[ ]						
RECOMMENDATIONS	(If dif	feren	t from NA	SA)							
1	) [	]	[ ]		[ DD/DELETE)						
* CIL RETENTION REMARKS:	RATIONALE:	(If a	applicabl	e) ADEQUATE INADEQUATE	[ ]						

DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-6152. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	DMG-4154	1/19/88 NASA DATA: RMS-4154 BASELINE [ X ] EPD&C 05-6-2613-2 NEW [ ]								
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4154 CIRCUIT		R, CB	9						
LEAD ANALYST:	ROBINSO	N								
ASSESSMENT:										
CRITICA FLIG	LITY im	REDUNDA	ANCY S	SCREE	NS		CIL ITEM	Ţ.		
HDW/F		A	В		С					
NASA [ / IOA [ 3 /3	] [	] ]	[	]	[ [	]	[	]	*	
COMPARE [ N /N	] [	]	[	]	(	]	[	]		
RECOMMENDATIONS	(If d	ifferen	t fro	m NAS	A)					
[ /	] [	1	[	]	[	] (AI	[ DD/DE		TE)	
* CIL RETENTION	RATIONAL	E: (If a	appli		AD	EQUATE EQUATE	[	]		
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-6153. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.										

ASSESSME ASSESSME NASA FME						6-261	3-1	L				ASA DATA BASELINI NEV		<b>(</b> ]	
SUBSYSTE MDAC ID:	M:			RMS/EI 4155 CIRCUI			R,	CE	313						
LEAD ANA	LYS	T:		ROBINS	SON										
ASSESSME	NT:														
		TY	R	EDUND	ANC	Y	SCRE	EN	s		CII	_			
			IGHT /FUN	1C	A			В			С		ITE	M	
NASA IOA	[	3 ,	/ /2R	]	[	]	[	N.A	]	[	N.	A]	[	]	*
COMPARE	[	N,	/N	]	[	]	[	N	]	[	N	]	[	]	
RECOMMEN	DAT	IO	NS:	(If	dif	feren	t f	rc	m NAS	SA	)				
	[	•	/	]	[	]	[		]	[		] (2	[ ADD/E	) EL	ETE)
* CIL RE	TEN	TI	ON F	RATION	LE:	(If a	app	li	.cable	•	•	250111 MD	_		
REMARKS:										I	A NA	DEQUATE DEQUATE	[	]	
DISREGAR THIS COM										F	ME	A EPD&C-	-6332		POWER

SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS

OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSMI ASSESSMI NASA FMI	ENT	II	<b>):</b>	RI	/19/8 1S-41 PD&C	-6-261	DATA: LINE NEW	[ X	]						
SUBSYSTI MDAC ID: ITEM:				4:	L56		C BREAKI	ER, C	B13						
LEAD ANA	<b>Ł</b> ŁYS	ST	:	R	BINS	ON									
ASSESSMI	ENT	:													
	CRITICALITY FLIGHT							DANCY	SCR	EENS			CIL		
	j					1	A	В		С					
NASA IOA	[	3	/ /3	]		[	]	[	]	[	]		[	]	*
COMPARE	[	N	/N	]		[	]	[	]	[	]		[	]	
RECOMME	NDA'	TI	ons	:	(If	di	ffere	nt fr	om N	IASA)					
	[		/	]		[	]	[	]	[	)	(A)	[ DD/D	] ELH	ETE)
* CIL R	ETE:	NT	ION	RA	TION?	ALE	: (If	appl	icab	ole) A INA	DEQUA	ATE ATE	[	]	
REMARKS DISREGA THIS CO SYSTEM OF THE	RD MPO AND	NE S	NT HOU	IS LD	PART BE Al	OF NAL	THE :	EPD&C WITH	PAY REGA	A FME	A EPI BAY I	D&C- MECH E TO	6333 ANIC TAL	AL	POWER FECTS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	DMG 4157									
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4157 SWITCH, S2	2								
LEAD ANALYST:	ROBINSON									
ASSESSMENT:										
CRITICAL FLIGH HDW/FU	T	EDUNDANCY SO	CREENS	CII						
NASA [ / IOA [ 3 /2R		] [ ] ] [ NA]	[ ] [ NA]	[	] *					
COMPARE [ N /N	] [	] [ N ]	[ N ]	[	]					
RECOMMENDATIONS:	(If diff	erent from	NASA)							
[ /	] [	] [ ]	[ ]		] DELETE)					
* CIL RETENTION	RATIONALE:	(If applica	able) ADEQUATE INADEQUATE		]					
REMARKS:			<b>~</b> ***		•					

DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5083. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	NT NT A #	DA IE	TE:	1/1 RMS EPI	L9/88 S-415 D&C 0	8 5-6-	2656-1	L			SA DATA ASELINI NEV		]
SUBSYSTE MDAC ID: ITEM:				415									
LEAD ANA	LYS	ST:	}	ROI	BINSO	N							
ASSESSME	NT:	3											
	CR]		CAI LIGH			RED	UNDAN	CY S	SCREE	NS		CIL	
	I					A		В		С			
NASA IOA	[	3	/3	]	]	]	[					[	
COMPARE	[	N	/N	1	ĺ	3	[		1	[	]	[	]
RECOMMEN	IDA!	ri	ONS	:	(If d	iffe	erent	fro	m NAS	A)			
	[		/	]	[	]	]		]	[	] (	[ ADD/D	] ELETE)
* CIL RI	e <b>te</b> i	NT:	ION	RAT	IONAI	Æ: (	(If ap	pli	cable		DEQUATE DEQUATE	[ [	1
REMARKS: DISREGAL THIS CON SYSTEM A OF THE D	RD IPO	NE S	NT :	IS P LD B	ART C	F TI	HE EPD ED WIT	&C H R	PAYLO EGARI	FME	A EPD&C BAY MEC O THE T	-5084 HANIC OTAL	AL POWER

ASSESSME ASSESSME NASA FME	NT D NT I A #:	ATE: D:		88 159 05-	6-265	NASA DAT BASELIN NE		<b>x</b> ]			
SUBSYSTE MDAC ID:			RMS/E 4159 SWITC								
LEAD ANA	LYST	:	ROBIN	SON							
ASSESSME	NT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT											SM
	HD	W/FU	NC	A		В			С		
NASA IOA	[ 3	/ /2R	]	[	]	[ [ N	] <b>A</b> ]	[	NA]	[ [	] <b>*</b> ]
COMPARE	[ N	/N	]	[	]	[ N	]	[	N ]	[	]
RECOMMEN	DATI(	ons:	(If	dif	feren	t fr	om NA	SA)	)		
	[	/	]	[	]	[	]	[	] (.	[ ADD/D	] ELETE)
* CIL RE	TENT:	ION 1	RATION	ALE:	(If a	appl	icabl	•	ADEQUATE		]
REMARKS:	יט שע.	TC T/	N EME	\ <b>X</b>	יששת ר	2D G	0 703		NADEQUATE	_	]

DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5115. THIS COMPONENT IS PART OF THE EPD&C PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALYZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	12.700	-		DMC 41	60	-2654	-1			ASA DATA: BASELINE NEW	[ X	]	
SUBSYSTE MDAC ID:				RMS/EF 4160 SWITCH		i							
LEAD ANA	LYS	ST	:	ROBINS	ON								
ASSESSME	ENT	:											
	CRITICALITY FLIGHT						NCY	SCREE	ens		CIL	ſ	
	1			NC	A		В		С			_	
NASA IOA	[	3	/ /3	]	[	]	[	]	[	]	[	]	*
COMPARE	[	N	/N	]	[	]	[	]	[	]	[	]	
RECOMMEN	NDA'	ΓI	ons:	(If	diff	erent	: fr	om NAS	SA)				
	ĺ		/	]	[	]	[	]	[	] (A	[ DD/DI		TE)
* CIL RI	ete:	NT:	ION :	RATION	ALE:	(If a	ppl:	icable	Al	DEQUATE DEQUATE	[	]	
THIS COL	EMARKS: ISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5116. HIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM ND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE ALLURE AND NOT LIMITED TO ITS EFFECTS ON RMS.												

ASSESSMI ASSESSMI NASA FMI	ENT	'I	D:		./19/88 NASA DATA: RMS-4161 BASELINE [ X ] RPD&C 05-6-2653-2 NEW [ ]								
SUBSYSTI MDAC ID: ITEM:				RMS/E 4161 SWITC									
LEAD ANA	ALY	ST	:	ROBIN	SON								
ASSESSMI	ENT	<b>!:</b>											
CRITICALITY REDUNDANCY SCREENS FLIGHT										CIL	ſ		
		HD	W/FU	NC	A			В	С				
NASA IOA	]	3	/ /2R	]	[	]	[	) NA]	[ [ NA	] ]	[	] <b>*</b>	
COMPARE	[	N	/N	]	[	]	[	n j	[ N	]	[	]	
RECOMMEN	NDA	TI	ons:	(If	dif	fere	nt f	rom N	'ASA)				
	[		/	]	Ţ	]	[	]	[	] (Al	[ DD/DE	] CLETE)	
* CIL RI	ETE	NT:	ION 1	RATION	ALE:	(If	app	licab	AD:	EQUATE EQUATE	[	]	
REMARKS: DISREGANTHIS CON AND SHOU FAILURE	RD IPO JLD	NE B	NT IS	S PART ALIZED	OF WIT	THE :	PAYL GARD	OAD B S TO	A FMEA AY MEC THE TO	EPD&C-! HANICAL FAL EFFI	5224. POWE	R SYSTEM	

ASSESSMENT SASSESSMENT SASSESS	ID:	RMS-41	MS-4162 BASELINE [ X ] PD&C 05-6-2655-1 NEW [ ] MS/EPD&C									
SUBSYSTEM: MDAC ID: ITEM:		RMS/EF 4162 SWITCH		7								
LEAD ANALYS	r:	ROBINS	ON									
ASSESSMENT:												
	TICAL FLIGH	ITY	RI	EDUNDA	ANCY	SCREE	ENS		CIL	1		
			A		В		С					
NASA [ IOA [	3 /3	]	[	]	[	]	[	]	[	]	*	
COMPARE [	n /n	1	[	]	[	]	[	]	[	]		
RECOMMENDAT	ions:	(If	dif	ferent	t fro	om NAS	SA)					
[	/	]	[	].	[	]	[	] (A	[ DD/D1		ETE)	
* CIL RETEN	TION	RATION	ALE:	(If a	appl	icable	A)	DEQUATE DEQUATE	-	]		
THIS COMPON												

ASSESSME ASSESSME NASA FME				MS-4163 BASELINE [ X ] PD&C 05-6-2653-2 NEW [ ]									
SUBSYSTE MDAC ID:			4163	EPD&C									
LEAD ANA	LYS'	T:	ROBI	nson									
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	H	DW/FU	NC	P	1	:	В		С				
NASA IOA	[ :	/ 3 /2R	]	[	]	[ ]	] NA]	[	] NA]		[	]	*
COMPARE	[ ]	N /N	]	[	]	[ ]	<b>N</b> ]	[ ]	и ]		[	]	
RECOMMEN	DAT	ions:	(I	f dif	fere	nt f	rom N	ASA)	•				
	[	/	] .	[	]	[	]	[	]	(Al	[ DD/D		TE)
* CIL RE	TEN	rion	RATIO	NALE:	(If	app.	licab	le)					
									ADEQUA ADEQUA		[	],	
DISREGAR THIS COM AND SHOU	INADEQUATE [ ] REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5230. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4164									
	RMS/EPD& 4164 SWITCH,									
LEAD ANALYST:	ROBINSON	Ī								
ASSESSMENT:										
CRITICAL		REDUNDA	ANCY	SCREE	ens		CIL	4		
FLIGH HDW/FU		A	В		С			_		
NASA [ / IOA [ 3 /3	] [	]	[	]	[	]	[	] <b>*</b>		
COMPARE [ N /N	] [	1	[	]	[	1	[	3		
RECOMMENDATIONS:	(If di	fferen	t fr	om NAS	SA)					
[ /	] [	1	[	<b>3</b> .	[	] (A)	[ DD/D1		E)	
* CIL RETENTION	RATIONALI	E: (If	appl:	icable	A	DEQUATE DEQUATE	_	]		
REMARKS: DISREGARD THIS I THIS COMPONENT I AND SHOULD BE AN FAILURE AND NOT	S PART OI ALIZED WI	F THE P [TH REG	AYLO. ARDS	AD BA! TO TI	Y ME( HE T(	CHANICAL OTAL EFF	POW.	ER S	YSTEN THE	

ASSESSMENT DATASSESSMENT ID:	<b>:</b>			ASA DATA BASELINE NEW	[ X	]					
SUBSYSTEM: MDAC ID: ITEM:	RMS/E 4165 SWITC										
LEAD ANALYST:	ROBIN	SON									
ASSESSMENT:											
	REEN	s		CIL							
	CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C									M	
NASA [ / IOA [ 3 /	R ]	[	]	[	NA]	[	N.	]	[	]	*
COMPARE [ N /	1	[	1	[	ן א	[	N		[	]	
RECOMMENDATION	: (If	dif	feren	t f	rom	NASA	)				
[ /	1	[	]	[	)	[			[ DD/D		ETE)
* CIL RETENTION	RATION	ALE:	(If	app	lica	ble)			_		
						I		EQUATE EQUATE	[	]	
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5432. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		6-2653-2	2		SA DATA: ASELINE NEW		]					
	RMS/EPD&C 4166 SWITCH, S	12										
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICAL FLIGH	ITY R	ens		CIL	Ī							
HDW/FU												
NASA [ / IOA [ 3 /3	] [	] [	]	[	]	[	] * ]					
COMPARE [ N /N	] [	] [	)	[	]	[	]					
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)								
[ /	] [	] [	]	[	] (A)	[ DD/DE	] ELETE)					
* CIL RETENTION	RATIONALE:	(If ap	plicable	AD	EQUATE EQUATE	[	]					
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5433. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTE AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE												

FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSMENT DATE: 1/19/88  ASSESSMENT ID: RMS-4167  NASA FMEA #: EPD&C 05-6-2653-1  NEW [ ]															
SUBSYSTE MDAC ID:				RMS/E 4167 SWITC		13									
LEAD ANA	LYS	T	:	ROBIN	SON										
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	H	(DV	/FU	NC	A			В			С			••	
NASA IOA	[	3	/ /2R	]	]	]	[	N2	] <b>A</b> ]	[	N.	]	[	]	*
COMPARE	[	N	/N	]	[	]	[	N	]	[	N	]	[	]	
RECOMMEN	DAT	'IC	ons:	(If	dif	feren	t i	fro	om NA	SA	)				
	[		/	]	[	]	[		]	[		] (A)	[ DD/D:	-	ETE)
* CIL RE	TEN	TI	ON :	RATIONA	ALE:	(If a	app	<b>)</b> 1	icabl	e)					
										II		DEQUATE DEQUATE	[	]	
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5434. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.															

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4168											
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4168 SWITCH, S	13										
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICAL FLIGH	ITY R	SCREENS		CIL ITEM	I							
HDW/FU		В	•	С								
NASA [ / IOA [ 3 /3	] [	] [	] [	]	[	) * ]						
COMPARE [ N /N	] [	] [	] [	]	[	]						
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)									
[ /	] [	] [	] [	] (A)	[ DD/DE	] ELETE)						
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE	_	]						
INADEQUATE [ ]  REMARKS:  DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5435.  THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.												

NASA FMEA #: EPD&C 05-6-2706-1 NE											ASA DATA BASELINE NEW	K ]	[ ]		
SUBSYSTI MDAC ID: ITEM:				RMS/E 4169 RESIS											
LEAD AND	ALY	ST	:	ROBIN	SON										
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	•			NC	A			В			С		ITE	M	
NASA IOA	[	3	/ /2R	]	[	]	[	N	] <b>A</b> ]	[	N2	]	[	]	*
COMPARE	[	N	/N	]	[	]	[	N	]	[	N	1	[	]	
RECOMMEN	IDA	TI	ons:	(If	dif	feren	<b>t</b> :	fro	om NA	ASA;	)				
	[		/	]	(	]	[		]	[			[ DD/D		ETE)
* CIL RE	TE	NT:	ION 1	RATION	ALE:	(If a	app	<b>)</b> 1:	cab1	le)					
										I		EQUATE	[	]	
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5082. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.															

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4170 EPD&C 05-	1	NASA DATA: BASELINE NEW								
	RMS/EPD&C 4170 RESISTOR,										
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL FLIGH	is	CIL ITEM									
	NC A	A	В	С							
NASA [ / IOA [ 3 /2R	] [	] [	] [   NA] [		[						
COMPARE [ N /N	] [	) [	[и]	ן א ן	[	]					
RECOMMENDATIONS:	(If di	fferent	from NASA	<b>(</b> )							
[ /	] [	] [	] [	[ ] (A)	[ DD/DE	] LETE)					
* CIL RETENTION	RATIONALE	: (If ap	oplicable)	ADEQUATE	[	]					
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5114. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.											

ASSESSME ASSESSME NASA FME	5-	1				ASA DATA BASELINE NEW		; ] ]							
SUBSYSTE MDAC ID:				RMS/E 4171 RESIS											
LEAD ANA	LY	ST	:	ROBIN	SON										
ASSESSME	NT	:													
												CIL			
			,		л			Ð			C				
NASA IOA	[	3	/ /2R	]	[	]	[	N.	] <b>A</b> ]	]	N2	] A]	[	]	*
COMPARE	[	N	/N	]	[	]	[	N	]	[	N	1	[	]	
RECOMMEN	DA'	ric	ons:	(If	dif	ferent	t 1	fro	om NA	SA	)				
	[		/	]	[	]	[		]	[			[ DD/D		
* CIL RE	TEI	נידע	TON F	RATTON	ALE:	(Tf a	m	,1 i	cahl	۱ د					
<b></b>						(11 (	^P'	,	Cabi	-	ΑI	EQUATE	[	1	
DEMADKS.										I	IAV	EQUATE	ĺ	j	
DISREGARITHIS COMMAND SHOU	ADEQUATE [ ] INADEQUATE [ ] REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5223. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		5-2703-:	1	NASA DATA: BASELINE NEW	(X	]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4172 RESISTOR,	R9				
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICAL	CIL ITEM					
FLIGH HDW/FU			В	С		
NASA [ / IOA [ 3 /2R	] [	] [	NA]	[ ] [ NA]	[	] * ]
COMPARE [ N /N	] [	] [	и ]	[ N ]	[	]
RECOMMENDATIONS:	(If dif	ferent	from NAS	A)		
[ /	] [	] [	]	[ ] (A)	[ DD/DE	] :LETE)
* CIL RETENTION	RATIONALE:	(If ap	plicable	ADEQUATE	[	]
REMARKS: DISREGARD THIS I THIS COMPONENT I AND SHOULD BE AN	S PART OF '	THE PAY	LOAD BAY	FMEA EPD&C-! MECHANICAL	5229. POWE	R SYSTE

FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

	ENT DATE: 1/19/88 NASA DATA: ENT ID: RMS-4173 BASELINE [ X ] EA #: EPD&C 05-6-2705-1 NEW [ ]										
SUBSYSTEM: MDAC ID: ITEM:	4173	EPD&C STOR, R	R12								
LEAD ANALYST:	ROBI	NSON									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C											
	FUNC	A		••							
NASA [ ,	2R ]	[ ]	]	NA]	[ N	] <b>A</b> ]	[	] * ]			
COMPARE [ N ,	'N ]	[ ]	[	n j	[ и	]	[	]			
RECOMMENDATION	is: (I	f diffe	rent i	from NAS	SĄ)						
. ]	]	[ ]	. [	]	[		[ DD/D:	] ELETE)			
* CIL RETENTION	N RATIO	NALE: (	If app	olicable	•						
						DEQUATE DEQUATE	[	]			
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5439. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTEM AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.											

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/19/88 RMS-4174 EPD&C 05-6	5-2703-1	-	NASA DATA: BASELINE NEW	[ X	]						
	RMS/EPD&C 4174 RESISTOR,	R13										
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICAL	CIL ITEM											
FLIGH HDW/FU		С										
NASA [ / IOA [ 3 /2R	] [	] [	NA]	[ ] [ NA]	[	] * ]						
COMPARE [ N /N	] [	] [	N ]	[и]	[	]						
RECOMMENDATIONS:	(If dif	ferent :	from NAS	A)								
[ /	] [	] [	3	[ ] (A)	[ DD/DE	] ELETE)						
* CIL RETENTION	RATIONALE:	(If ap	plicable	e) ADEQUATE INADEQUATE	[	]						
REMARKS: DISREGARD THIS IOA FMEA AND REFER TO IOA FMEA EPD&C-5431. THIS COMPONENT IS PART OF THE PAYLOAD BAY MECHANICAL POWER SYSTE AND SHOULD BE ANALIZED WITH REGARDS TO THE TOTAL EFFECTS OF THE												

FAILURE AND NOT LIMITED TO ITS EFFECTS ON RMS.

ASSESSME ASSESSME NASA FME	NT	D. I:	ATE D:	: 1/15/88 RMS-4175X 05-6IB-MPM-2C										1		A DA SELI N	NE		]		
SUBSYSTE MDAC ID: ITEM:				R 4	MS/I 175 WITO	EPD	&C														
LEAD ANA	LY	ST	:	R	овії	150	N														
ASSESSMENT:																					
CRITICALITY REDUNDANCY SCREENS FLIGHT												CIL									
	]				C A B C											ITE	M				
NASA IOA	[	3 3	/3 /3	]		]	P	]		[	P	]		[ E	, ]			[	]	*	
COMPARE	[		/	]		[	N	]		[	N	]		[ ]	[ ]			[	]		
RECOMMEN	D <b>A</b> T	ric	ONS:	•	(If	d:	if	fer	ent	f	ro	om l	NAS	A)							
	[		/	]		[		]		[		]		[	]		(AI	[ DD/D	] ELE	TE)	)
* CIL RE	re1	T	CON	RA'	rion	ALI	Ξ:	(I:	f a	gç	li	.cal	ble				_	_			
DEMADEC.																TAUÇ TAUÇ		[	]		
THIS FMEA FMEA WAS COVERED I IOA CONCU	REMARKS: THIS FMEA DOES NOT REQUIRE ASSESSMENT DUE TO ITS CRIT. THIS IOA FMEA WAS GENERATED TO ESTABLISH A FAILURE MODE WHICH WAS NOT COVERED BY IOA IN THE ORIGINAL ANALYSIS. IOA CONCURS WITH THE NASA POST 51L FMEA EXCEPT THAT THE REDUNDANCY SCREENS SHOULD BE BLANK FOR CRIT 3/3 FMEAS.																				

ASSESSME ASSESSME NASA FME				-	340 41	28/88 NASA S-4176X BASI S-61B-MPM-2F													
SUBSYSTE MDAC ID: ITEM:				4	MS/EP 176 WITCH			<b>:</b>											
LEAD ANA	LYS	ST:	:	F	ROBINS	10	1												
ASSESSME	ENT	:																	
	CR				Y		RE	DUNDA	MC	CY	SCREE	:NS	3			IL PEM	Ī		
	1		LIGI V/FU		2		A			В			С						
NASA IOA	[	2	/11/	R ]	]	[	P P	]	[	P P	]	[	P P	]	[	X X	]	*	
COMPARE	[		/	]	]	[		]	[		]	[		1	[		]		
RECOMME	NDA'	TI	ONS	<b>:</b> .	(If	d:	if	ferent	<b>t</b> :	fro	om NAS	SA)	)						
	[		/		]	[		]	[		]	[		] (A		/DI		TE)	
* CIL R	ETE	NT	ION	R	ATION?	λL	Ε:	(If a	ap)	pl:	icable			DEQUATE DEQUATE			]		
REMARKS IOA CON GENERAT IOA IN	CUR ED	TO	ES	TA:	BLISH	Α	F	AILUR	AS. E	A :	FMEA. DE WHI	IC	rh: H V	IS IOA H WAS NOT	CO	A VEI	VAS REI	S D BY	<b>,</b>
LOSS OF	OP AN	ER	ATI POS	ON SI	OF TI	HE EQ	s' UI	RE JE	TT	IS	ON OF	1.	HE	REMOTE	MA	IA T	E I PUI	LOSS	; C )R

ARM IF IT CANNOT BE SAFELY STOWED AND POSSIBLE LOSS OF

CREW/VEHICLE IF IT CANNOT BE SAFELY JETTISONED.

ASSESSMI ASSESSMI NASA FMI	ENT I	D:	RMS-4	MS-4177X BASELINE [ ] 5-6IB-MPM-5A NEW [ X ]											
SUBSYSTE MDAC ID:			RMS/E 4177 RESIS			(6	EACH)								
LEAD ANA	LYSI	<b>!:</b>	ROBIN	SON											
ASSESSME	ENT:														
CRITICALITY REDUNDANCY SCREENS FLIGHT											1				
			NC	A B C											
NASA IOA	[ 3 [ 3	/3 /3	]	[	]	[	]	[	]	[	] *				
COMPARE	[	/	]	[	]	[	]	[	]	[	]				
RECOMMEN	DATI	ons:	(If	dif	feren	t fr	om NA	SA)							
	[	/	]	[	]	[	]	[		[ ADD/D	] ELETE)				
* CIL RE	TENT	ION 1	RATION	ALE:	(If a	appl	icabl	e)							
									DEQUATE DEQUATE		]				
REMARKS:	UE.	IOA	CONCUI	RS W	ITH NA	ASA :	POST	51L 1	FMEA EXC	EPT	THAT THE				
REDUNDAN	NO ISSUE. IOA CONCURS WITH NASA POST 51L FMEA EXCEPT THAT THE REDUNDANCY SCREENS SHOULD BE BLANK. THIS IOA ADDITIONAL FMEA IS														

GENERATED FOR ASSESSMENT PURPOSES.

ASSESSME ASSESSME NASA FME	NT	IL	<b>):</b>	2/24/8 RMS-41 05-6IE	X IPM	<b>-</b> 6			ASA DA BASELI N	NE							
SUBSYSTE MDAC ID: ITEM:				RMS/ER 4178 RESIST			1.2	F	ЮН	1, 21	W,	(2	EACH)				
LEAD ANA	LYS	ST:	:	ROBINS	108	1											
ASSESSME	NT:	:															
		FI	LIGH				DUND	AN		SCR	EEN	s c			CIL		
	F	IDV	V/FUI	NC.		A			В			C					
NASA IOA	[	3 3	/1R /1R	]	[	P P	]		P P	]	] [	P P	]		[	]	*
COMPARE	[		/	]	[		]	1	[	]	(		]		[	]	
RECOMMEN	DA:	ΓI	ons:	(If	<b>d</b> :	ifi	feren	ıt	fr	om N	ASA	.)					
	[		/	]	[		]		[	]	[		]	(A		) ELI	ETE)
* CIL RE	TE!	NT:	ION :	RATION	ΑL	E:	(If	aj	ppl	icab		A	DEQUA'I DEQUA'I	CE CE	[	]	
REMARKS: NO ISS ADDITION	SUE	F	IOA MEA	CONCU IS GEN	RS ER	W AT	ITH N ED FO	IA: OR	SA AS	POST SESS	51 MEN	.L T	FMEA. PURPOS	T: SES	HIS	IO	A

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-417	9X		NASA DATA BASELINE NEW									
SUBSYSTEM: MDAC ID: ITEM:	4179		(2 EACH)										
LEAD ANALYST:	ROBINSO	N											
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C													
HDW/FU													
NASA [ 3 /1R IOA [ 3 /1R	] [	[P] [P] [P] [P] [P] [P]											
COMPARE [ /	] [	]	[ ]	[ ]	[ ]								
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)									
[ /	] [	]	[ ]		[ ] DD/DELETE)								
* CIL RETENTION REMARKS:	RATIONALI	E: (If a	applicable	e) ADEQUATE INADEQUATE	[ .]								
			ASA POST 5		HIS IOA								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/24/88 RMS-4180 05-6IB-				SA DATA: ASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4180 LIMIT S		(2 EACH)				
LEAD ANALYST:	ROBINSO	N					
ASSESSMENT:							
CRITICAL		REDUNDA	ANCY SCREE	ens		CIL	
FLIGH HDW/FU							
NASA [ 3 /11 IOA [ 3 /21	R ] [	P ] P ]	[ P ] [ P ]	[ P [ P	]	[	] * ]
COMPARE [ /N	] [	1	[ ]	[	]	[	1
RECOMMENDATIONS	(If d	ifferen	t from NAS	SA)			
[ /	] [	]	[ ]	[	] (A	[ DD/D	] ELETE)
* CIL RETENTION	RATIONAL	E: (If	applicablo	AL	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE. IO ADDITIONAL FMEA	A CONCURS	WITH N	ASA POST R ASSESSM	51L I ENT I		HIS	IOA

ASSESSMEN ASSESSMEN NASA FMEA	NT ID:	RMS-41	M-8					ASA DA BASEL:		[	x ]		
SUBSYSTEM MDAC ID: ITEM:		RMS/EPI 4181 LIMIT		<b>ICHES</b>	(2	EACH)							
LEAD ANAI	LYST:	ROBINS	ИС										
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
HDW/FUNC A B C													
NASA IOA	[ 3 /1R [ 3 /1R	]	[P] [P] [P] [P] [P] [P]										
COMPARE	[ /	]	[	]	[	]	[		]		[	]	
RECOMMEND	ATIONS:	(If o	liff	ferent	t fr	om NA	SA)	)					
	[ /	] [		]	[	]	[		]	(AI	[ DD/I	] DELE	TE)
* CIL RET	ENTION 1	RATIONAI	Œ:	(If a	appl	icabl	e)	Αſ	EQUAT	E	[	]	
REMARKS:							IN		PEQUAT			j	
NO ISSU ADDITIONA	E. IOA L FMEA											IOA	<b>.</b>

ASSESSMEN	A PRICE W. 03 012 IIII CI												NE				
SUBSYSTEM MDAC ID:				RMS/EP 4182 LIMIT			CHES	(	2 I	EACH)							
LEAD ANA	LYS	T:		ROBINS	ON	I											
ASSESSME	T.																
•	CRI			ETY P		RI	EDUND	Αì	ICY	SCREI	EΝ	S			CIL		
FLIGHT HDW/FUNC A B C																	
NASA IOA	[	3	/1R /1R	.•										[	) ]	*	
COMPARE	[		/	]	[		]		[	]	[		]		[	]	
RECOMMEN	DAT	CIC	ons:	(If	<b>d</b> :	if	feren	ıt	fr	om NA	SA	.)					
	[		/	1	[		]		[	3	[		]	(A		) EL	ETE)
* CIL RE	TEI	T	ION :	RATION	AL	Е:	(If	aj	ppl	icabl		A	DEQUAT DEQUAT	TE TE	[	]	
REMARKS: NO ISS ADDITION	UE.	Fl	IOA MEA	CONCUI	RS ER	W: AT:	ITH N	IA: OR	SA AS	POST SESSM	51 EN	L	FMEA.	T SES	HIS	10	A

ASSESSMI ASSESSMI NASA FMI	ENT I	D:	1/19/ RMS-4 05-6I	1833		NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTE MDAC ID:			RMS/E 4183 RESIS			6 E	ACI	H)							
LEAD ANA	LYST	:	ROBIN	SON											
ASSESSME	ENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C															
	no	N/ FU	WC.		•		D			C					
NASA IOA	[ 3	/3 /3	]	[ N	]	[ [	N	]	[	N	]	[	] <b>*</b> ]		
COMPARE	ſ	/	]	[ N	]	[	N	3	[	N	]	[	]		
RECOMMEN	DATIC	ons:	(If	dif	fere	nt 1	fro	om NA	ASA	)					
	[	/	]	[	]	[		]	[		] (A	[ .DD/D	] ELETE)		
* CIL RE			,						I	IAI	~	[	]		
NO ISSUE	. TH	IE F	AILURE	RES	ULTS	IN	LC	SS C	)F I	205	ITION I	NDIC.	ATIONS.		

IN CONSIDERATION THAT THE CRITICALITY INVOLVED IS 3/3, IOA

RECOMMENDS GENERATING A COMPARABLE FMEA FOR ASSESSMENT

SIMPLIFICATION.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 NASA DATA: RMS-4201 BASELINE [ ] 05-6IC-MRL-4 NEW [ X ]											
2002 raini.	RMS/EPD&C 4201 HYBRID RELAY, K20											
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICAL: FLIGH	CIL ITEM											
HDW/FU	FLIGHT HDW/FUNC A B C											
NASA [ 3 /1R IOA [ 3 /2R	] [ P ] [	P ] [ P ] NA] [ NA]	[ ] *									
COMPARE [ /N	] [ N ] [	и] [и]	[ ]									
RECOMMENDATIONS:	(If different	from NASA)										
[ /	] [ ] [		[ ] DD/DELETE)									
* CIL RETENTION	RATIONALE: (If app	plicable) ADEQUATE INADEQUATE	[ ]									
BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4303	MPARE WITH THE NAME OF THE NAM	T OF 3/1R. IOA SCR SA FMEA, IOA RECOMM EAs: 4201, 4203, 4 9, 4261, 4263, 4279 3, 4325, 4327, AND STARBOARD HYBRID RE AND AFT LATCH/RELEA	EENS SHOULD EENDS 205, 4207, 4281, 4283 4329. THE CLAYS USED BY									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4202 05-6IC-MR	0/88 NASA DATA: -4202 BASELINE [ ] -6IC-MRL-5 NEW [ X ]									
SUBSYSTEM:	RMS/EPD&C 4202 HYBRID RE	!									
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL FLIGH HDW/FU		EDUND#	ANCY SCRE	ENS C	CIL						
NASA [ 3 /1R IOA [ 3 /2R	] [ P	]	[ P ] [ NA]	[ P ] [ NA]	[	] *					
COMPARE [ /N	] [ N	]	[ N ]	[ N ]	(	]					
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)							
[ /	] [	]	[ ]		[ ADD/D	] ELETE)					
* CIL RETENTION : REMARKS: NO ISSUE.	RATIONALE:	(If a	applicablo	e) ADEQUATE INADEQUATE	[	]					
IOA CONCURS WITH BE 1-P-P. TO COI	THE POST	51L CR	RIT OF 3/1	IR. IOA SCR	EENS	SHOULD					
COMBINING THE FOR 4258, 4260, 4280	LLOWING 12 , 4282, 430	IOA F 02, 43	MEAs: 42	202, 4204, 4 , AND 4326.	236,	•					
THE 12 IOA FMEAS STARBOARD HYBRII	ARE FOR 6	INDIV	IDUAL POI	RT AND 6 IND	IVID	JAL					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88  RMS-4203  05-6IC-MRL-4  NASA DATA:  BASELINE [ ]  NEW [ X ]										
SUBSYSTEM: MDAC ID: ITEM:											
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL FLIGH	ITY REDUNI	DANCY SCREE	ins	CIL ITEM							
	NC A	В	С								
NASA [ 3 /1R IOA [ 3 /2R	[ P ] [ ]	[ P ] [ NA]	[ P ] [ NA]								
COMPARE [ /N	] [N]	[ N ]	[ N ]	[ ]							
RECOMMENDATIONS:											
[ /	] [ ]	[ ]	[ ] (A	[ ] DD/DELETE)							
* CIL RETENTION	RATIONALE: (If	applicable	e) ADEQUATE INADEQUATE	[ ]							
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4303 IOA FMEAS ARE FO	MPARE WITH THE DLLOWING 24 IOA 0, 4241, 4257, 3, 4305, 4307, 0R 12 PORT AND	NASA FMEA FMEAs: 4: 4259, 4261 4323, 4325 12 STARBOA	, 10A RECOMM 201, 4203, 4 , 4263, 4279 , 4327, AND RD HYBRID RE	ENDS 205, 4207, , 4281, 4283, 4329. THE							

SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH

PORT AND STARBOARD ARMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4204 05-6IC-MRL-5	L/30/88 NASA DATA: RMS-4204 BASELINE [ ] D5-6IC-MRL-5 NEW [ X ]										
SUBSYSTEM: MDAC ID: ITEM:		K52										
LEAD ANALYST:	ROBINSON											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS C FLIGHT I HDW/FUNC A B C												
		[ P ] [ P ] [ NA]	[ ] *									
COMPARE [ /N	] [ N ]	[ N ] [ N ]	[ ]									
RECOMMENDATIONS:	(If differen	t from NASA)										
1	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)									
* CIL RETENTION F REMARKS: NO ISSUE.	RATIONALE: (If		UATE [ ] UATE [ ]									
IOA CONCURS WITH BE 1-P-P. TO COM	IPARE WITH THE	NASA FMEA, IOA R	ECOMMENDS									
COMBINING THE FOI 4258, 4260, 4280, THE 12 IOA FMEAS STARBOARD HYBRID	LOWING 12 IOA 4282, 4302, 4 ARE FOR 6 INDI	FMEAs: 4202, 42 304, 4324, AND 4 VIDUAL PORT AND	04, 4236, 4238, 326.									

ASSESSMENT ASSESSMENT NASA FMEA	TE:	1/24/8 RMS-42 05-610	88 205 C-M	; IRL	4						SA DAS BASELII NI	NE.		]		
SUBSYSTEM: MDAC ID: ITEM:				2D8	C											
LEAD ANALY	ST:		ROBIN	SON	ī											
ASSESSMENT:																
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C												CIL				
	HDW	//FU	NC		A			Ð			C					
NASA [ ] AOI	•												[	]	*	
COMPARE [		/N	]	(	N	]	[	N	]	[	N	]		[	]	
RECOMMENDA	TIC	ons:	(If	<b>d</b> :	if	feren	t:	fr	om N	ASA	)					
[		/	1	[		3	[		3	[		]	(Al	[ DD/DI		
* CIL RETE	ENT:	ION	RATION	AL	E:	(If	ap)	pl	icab	le) I	A NA	DEQUAT DEQUAT	E E	[	]	
REMARKS: NO ISSUE. IOA CONCUE BE 1-P-P. COMBINING 4235, 4233 4285, 4303 IOA FMEAS	THO	O CC E FC 4239 4303 E FC	MPARE LLOWIN , 4241	WI IG ,	TH 24 42 43 T	THE IOA 57, 4 07, 4 AND 1	NA FM 25 32	SA EA 9, 3,	A FME As: , 426 , 432 TARBO	A, 420 1, 5, ARD	1, 42 43	4203, 63, 42 27, AN YBRID	79 ID RE	ENDS 205, , 42: 4329 LAYS	42 81, US	207, 4283, THE SED BY

PORT AND STARBOARD ARMS.

SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH

ASSESSMENT DATE: 2/16/ ASSESSMENT ID: RMS-4 NASA FMEA #: 05-61								/16/88 NASA DATA: MS-4206 BASELINE [ ] 5-6IC-MRL-6 NEW [ X ]															
SUBSYSTEM MDAC ID:	1:				RN 42		PD	&C															
LEAD ANAI	LY:	ST	:		RO	BIN	so	N															
ASSESSMEN	IT:	:																					
CRITICALITY REDUNDANCY SCREENS CITED ITS HDW/FUNC A B C																							
NASA [2/1R] [P] [F] [P] IOA [3/2R] [] [NA] [NA]												[	x	]	*								
COMPARE	COMPARE [ N /N ]										[	N	]		[	N	]		[	N	]		
RECOMMEND	ΑΊ	PI)	SNC	:		(If	đ:	if1	fer	ent	1	fro	om I	NAS	A)								
	[		/		]		[		]		[		]		[		]	(A	DD,	/DI	-	ΞT	E)
* CIL RET	ΈN	T.	ION	F	ras	'ION <i>I</i>	ALI	€:	(1	[f a]	pŗ	oli	cal		•	AI	DEQU	ATE ATE	[		]		
REMARKS:															T.1.	INL	ÆQU	MIE	L		J		
NO ISSUE.  IOA CONCURS WITH THE POST 51L CRIT OF 3/1R. IAO SCREENS  BE 1-P-P. TO COMPAPE WITH THE NASA EMER TO A DECOMPANDO											SI	Юŀ	ULD										
BE 1-P-P. TO COMPARE WITH THE NASA FMEA IOA RECOMMEND COMBINING THE FOLLOWING 12 IOA FMEAS: 4206, 4208, 4240 4262, 4264, 4284, 4286, 4306, 4308, 4328, AND 4330. THE 12 IOA FMEAS ARE FOR 6 INDIVIDUAL PORT AND 6 INDIVISTARBOARD HYBRID RELAYS FOR RELEASING.											ο,			2,									
STARBOARD	1	H?	/BR	ID	R	ELAY	S.	FC	R	RELI	ΞA	SI	NG.	•									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4207 05-6IC-MI	RL-4	1	NASA DATA: BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&0					
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
FITCH	цı	REDUNDANC			CIL ITEM	
HDW/FU	NC .	A	В	С		
NASA [ 3 /1R IOA [ 3 /2R	] [	P ] [ ]	P ] [ NA] [	P ] NA]	[	] * ]
COMPARE [ /N	] [	ן א [ א	и] [	и ]	[	1
RECOMMENDATIONS:	(If di	.fferent f	rom NASA)			
[ /	] [	] [	] [		[ DD/DE	] LETE)
* CIL RETENTION	RATIONALE	E: (If app	licable) IN	ADEQUATE NADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4303 IOA FMEAS ARE FO SYSTEM 1 AND SYS PORT AND STARBOA	OMPARE WIT OLLOWING 2 0, 4241, 4 3, 4305, 4 OR 12 PORT	THE NAS 24 IOA FME 4257, 4259 4307, 4323 F AND 12 S	A FMEA, 1 As: 4201 4, 4261, 4 4, 4325, 4 TARBOARD	1, 4203, 42 4263, 4279 4327, AND 4 HYBRID RE	205, , 428 4329. LAYS	4207, 31, 4283 THE USED BY

ASSESSMENT ASSESSMENT NASA FMEA	DATE: ID: #:	2/16/8 RMS-42 05-6IC	8 08 -MRI	Ľ <b>−</b> 6				NASA DAT BASELIN NE				
SUBSYSTEM: MDAC ID: ITEM:		RMS/EP 4208 HYBRID	D&C									
LEAD ANALYS	ST:	ROBINS	ON									
ASSESSMENT:	:											
	TICALI FLIGHT	נ	RE A	DUNDA	NO	CY SCR	EENS	c c	CI		ſ	
NASA [ IOA [	2 /1R 3 /2R	]	[ P	]	]	F ] NA]	[	P ] NA]	]	x	]	*
COMPARE [	N /N	]	[ N	]	[	и ј	[	N ]	[	N	]	
RECOMMENDAT	cions:	(If o	diff	erent	f	from N	ASA)					
	/	]	[	]	[	]	[		[ ADD/			TE)
* CIL RETEN	TION F	RATIONAI	LE:	(If a	pp	licab]	•	ADEQUATE ADEQUATE			]	
NO ISSUE. IOA CONCURS BE 1-P-P. COMPARE WIT ARE FOR 6 P	IOA RE H THE ORT AN	COMMENI NASA FN D 6 STE	OS C MEA. BD H	OMBIN COM YBRID	IN BI R	G THE NE THI ELAYS.	FOL E FO	LOWING IC	DA F	EM A	As FM	TO EAs
THE 12 IOA STARBOARD	FMEAs HYBRID	ARE FOR	R 6 S FO	INDIV R REL	ID EA	UAL PO	ORT	AND 6 INI	DIVI	DU	AL	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4209 05-6ID-2	128-1		NASA DATA: BASELINE NEW										
	RMS/EPD& 4209 RELAY, K	iC .												
LEAD ANALYST:	ROBINSON	ī												
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
FLIGHT HDW/FUNC A B C														
NASA [ 2 /1R IOA [ 3 /2R	] [	P ] [	P ] [ NA] [	P ] NA]	[ X ] * [ ]									
COMPARE [ N /N	] [	и ] [	и ] [	и ј	[ N ]									
RECOMMENDATIONS:	(If di	ifferent f	rom NASA)	)										
[ /	] [	] [	] [	P ] (Al	[ DD/DELETE)									
* CIL RETENTION	RATIONALI	E: (If app		ADEQUATE NADEQUATE										
REMARKS: NO ISSUE. RECOMMENTHE IOA FMEA FOR THE MANIPULATOR SET OF NASA FMEADO NOT MATCH WHE POSITION LATCHING.	R FAILURE RETENTION AS ALSO AND COMPARI	OF THESE N LATCH CO ND THEREFO ED. THE F AND APPEA	RELAYS WARD RELAYS WARE THE RELAYS AREAN BOTE	AS GENERAT RCUIT WHIC ESULT OF T E 4 POLE,	TY 2/1R. ED AS PART OF H IS 05-6IC HE FAILURES 2 H CONTROL AND									

THE JETTISON/GUILLOTINE CIRCUITS. IOA CONCURS WITH THE NASA

FAILURE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4210 05-6ID-2131-1 RMS/EPD&C	NASA DATA: BASELINE [ X ] NEW [ ]												
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4210 RELAY, K76													
LEAD ANALYST:	ROBINSON													
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL ITEM HDW/FUNC A B C  NASA [ 3 /3 ] [ P ] [ P ] [ P ] [ ] *														
	] [P] [P] [ ] [NA] [													
COMPARE [ /N	] [ ] [ N ] [	N ] [ ]												
RECOMMENDATIONS:	(If different from NASA)													
[ 3 /2R	] [ ] [ ] [	P ] [ ] (ADD/DELETE)												
	RATIONALE: (If applicable) IN	ADEQUATE [ ] ADEQUATE [ ]												
COMPONENTS IN 102 THE 10A FMEA FOR THE MANIPULATOR 1 SET OF NASA FMEAS DO NOT MATCH WHEI POSITION LATCHING	ING THE NASA FMEA TO 3/2R. A FMEAS 4210 AND 4288. FAILURE OF THESE RELAYS WA RETENTION LATCH CONTROL CIRS ALSO AND THEREFORE THE RENOTH COMPARED. THE RELAYS ARE RELAYS AND APPEAR IN BOTH LLOTINE CIRCUITS. IOA CONC	RECOMMEND COMBINING  S GENERATED AS PART OF CUIT WHICH IS 05-61 SULT OF THE FAILURES 4 POLE, 2 THE LATCH CONTROL AND												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4211 05-6IC-N	l MRL-7A				SA DATA: ASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4211 FUSE, F	&C 4						
LEAD ANALYST:	ROBINSO	И						
ASSESSMENT:								
CRITICAL FLIGH	CIL ITEM							
HDW/FU								
NASA [ 3 /1R IOA [ 3 /3	] [	P ]	[ P	]	P [	]	[	] *
COMPARE [ /N	] [	n ]	[ N	]	[ N	1	[	]
RECOMMENDATIONS:	(If d	ifferent	fro	om NAS	A)			
[ /	] [	1	[	]	[	] (A)	[ DD/DI	] ELETE)
* CIL RETENTION	RATIONAL	E: (If a	ppl:	icable	) Al INA	DEQUATE DEQUATE	[	]
REMARKS:  UPGRADE IOA CRIT  MULTIPLE FAILURI  INABILITY TO SAI  GUILLOTINE/JETT  COULD RESULT IN  CORRESPONDS TO 1  4267, 4268, 4289  RECOMMENDS COMPART	ES COULD FELY LATO ISON SYST LOSS OF THE FOLLO O, 4290,	CAUSE MC THE RM TEM CREW/VEF DWING IOA 4311, 43	TOR IS A IICL IFM IICL IICA IICA IICA	BURNO ND SUE E. TH EAs: 4 4333, FMEAs	SEQUIS (211 AN S IN	ONE NASA , 4212, D 4334. TO ONE	LURE FME	OF THE A , 4246,

ASSESSME ASSESSME NASA FME	ent Ent Ea	D. I #:	ATE: D:	1/ RM 05	/30/8 IS-42 5-6I	38 21: C-I	2 MIRI	L-՝	7 <b>A</b>							ASA D BASEL	INE				
SUBSYSTE MDAC ID:	EM:			42	IS/EI 12 ISE,																
LEAD ANA	LY	ST	:	RC	BINS	501	N														
ASSESSME	ENT	:																			
	CR		ICAL LIGH		•		RI	EDU	JNDAI	10	CY	S	CREE	NS	3			CIL			
	1	HDI	W/FU	NC			A				В				С			4101	•		
NASA IOA	[	3	/1R /3	]		[	P	]	! !	:	P	]		[	P	]		[	]	*	
COMPARE	[		/N	]		[	N	]	l	•	N	]		[	N	]		C	]		
RECOMMEN	DA!	ΓΙC	ons:		(If	đi	iff	er	ent	f	ro	m	NAS	A)	ı						
	[		/	]		[		]	(	•		]		[		]		[ DD/DE		ETE)	
* CIL RE	TEI	VT)	ION I	RAT	IONA	LF	E :	(1	fap	q	li	ica	able								
REMARKS:														IN	AI IAI	DEQUA!	re re	[	]		
UPGRADE MULTIPLE INABILIT	Y 7	AII CO	LURES SAFI	ELY	OULD LAT	CH	UA: T	SE	COM:	'O	R	BU	JRNO	UT	' 7	AND CO	JUT.F	) LEA	מי	TO	2
GUILLOTI COULD RE CORRESPO 4267, 42 RECOMMEN TO ALLOW	NE/ SUI NDS 68, DS	JE LT S 1 , 4	ETTIS IN I TO TH 1289, OMBIN	SON LOS: IE . 4: VIN	SYS S OF FOLL 290, G AL	TE OW 4	M RE IN 31 LI	W/ G 1,	VEHI IOA 431 ED I	C F 2	LE ME	As 43 FM	TH: 3: 4: 333, MEAs	IS 21 A I	l,	NE NA 4212 4334	ASA 2, 4	FMEA			
														_							

NASA DATA:

ASSESSME ASSESSME NASA FME	NT NT A #	DA ID	TE:	1/2 RMS 05-	25/8 5-42 -6IC	8 13 -M	RL	-12						SA DA ASELI 1	INE	[ x		
SUBSYSTE MDAC ID: ITEM:	M:			RM3	S/EP	D&	C											·
LEAD ANA	LYS	ST:	:	RO	BINS	ON	ſ											
ASSESSME	NT:	:																
CRITICALITY REDUNDANCE SCREENS ITE															CIL			
FLIGHT HDW/FUNC A B C																		
NASA IOA	[	3	/3 /3	]		[	N	]	[	N	]	[	N	]		[	]	*
COMPARE	[		/	1		[	N	]	(	N	1	[	N	]		[	]	
RECOMMEN	1DA	TI	ONS	:	(If	<b>d</b> :	if	feren	t	fr	om NAS	5A	)					
	[		/	1		[		3	[		1.	[		3	(A	[ DD/D	ELI	ETE)
* CIL R	ETE	NT	ON	RAT	CION	AL	E:	(If	ap	pl	icabl		A	DEQU <i>A</i> DEQU <i>A</i>		[	]	
REMARKS NO ISSU CIRCUIT IOA FME PURPOSE 4213 TH 4313 TH	E. " W As S, RU	AD IC	H TODRE	HE I SS T ECON	FAIL THE MMEN 47 T	UR IN DS HR	E DI C U	MODE VIDUA OMBIN 4750,	AS L IIN 4	CO IG 26	MPONE THE F 9 THR	EO NT OI	S.	FOI WING	R CO IOA	MPAR FME	IS As	ON:

ASSESSM ASSESSM NASA FM	ENT	ri	D:	: 1/2 RMS 05-	25/88 -421 -6IC-	4 MR	RL-1	2					DAT. SELIN		) <b>x</b> ]	
SUBSYST MDAC ID ITEM:				RMS 421	/EPD	&C	•									
LEAD AN	ALY	ST	<b>':</b>	ROB	INSO	N										
ASSESSM	ENT	<b>:</b>														
		F	LIG	LITY HT JNC		R A		NDAI	ICY B		REENS	c		CI:		
NASA IOA	[	3	/3 /3	]	[	N	]	[	N	]	[	и ј ј		[	]	*
COMPARE	[		/	]	[	N	]	[	N	]	[	n j		[	]	
RECOMMEN	IDA <sup>(</sup>	TI	ons:	(:	If d	Ĺf	fere	nt	fr	om N	'ASA)					
	[		/	J	[		].	[		]	[	]	(A	[ DD/[	] DELE	TE)
* CIL RE	TE	NT)	ГОИ	RATIO	ONALE	:	(If	ap	pl:	icab	le)					
REMARKS:													JATE JATE	[ [	]	
NO ISSUE CIRCUIT"		TH TH	IE N I TH	ASA 1 E FA]	MEA LURE	II M	EM ODE	IS AS	THI	E "R	EADY NEOUS	TO I	ATCH	IND	)ICA	rio

NC CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSM ASSESSM NASA FM	ENT	II		RMS	5/8 -42 -6IC	15		-12						-		DATA: LINE NEW	[	
SUBSYST MDAC ID ITEM:				421	S/EP 15 SIST			R28										
LEAD AN	ALY	ST	:	ROE	BINS	10	1											
ASSESSM	ENT	:																
	CR		ICAL				RE	DUNI	DAN	ICY	?	SCR	EENS	3			CII	
			LIGH W/FU				A			E	3			С				
NASA IOA	. [	3	/3 /3	]		]	N	]	1	N	1	]	[	N	]		[	] * ]
COMPARE	. [		/	]		[	N	]	1	[ ]	1	]	[	N	]		[	]
RECOMME	ENDA	TI	ons:		(If	d	if	fere:	nt	fı	rc	om N	IASA	)				
	ſ	•	/	]		[		]		[		]	[		]	(A		] DELETE)
* CIL I	RETE	ENT	NOI	RAT	ION	ΑL	E:	(If	<b>a</b>	pp:	1:	Lcak				UATE UATE		]

REMARKS:

NO ISSUE. THE NASA FMEA ITEM IS THE "READY TO LATCH INDICATION CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMI ASSESSMI NASA FMI	ENT	I	D:	RI	/25/3 MS-43 5-610	21		L-1	2								A DATA SELINE NEW		]		
SUBSYSTE MDAC ID:				4:	MS/E 216 ESIS			R6	3												
LEAD ANA	LYS	T	:	R	DBINS	SO	N														
ASSESSME	ENT:																				
		Fl	ICAL LIGH	T	ľ			EDUI	NDAI	V		sc	CREI	EN				CII			
HDW/FUNC A B C																					
NASA IOA	[	3 3	/3 /3	]		[	N	]	! !		N	]		[ [	N	]		[	]	*	
COMPARE	(		/	]		(	N	]	l	-	N	]		[	N	]		[	]		
RECOMMEN	DAT	IC	ons:		(If	đi	ff	ere	∍nt	f	rc	m	NAS	A)	)						
	[		/	]		[		]	[	•		]		[		)	(Al	[ DD/D	] ELE	e <b>T</b> i	E)
* CIL RE	TEN	TI	ON I	RAI	'IONA	LE	: :	(I1	f ap	q	1i	.ca	ble	-			QUATE QUATE	[	]		•
NO ISSUE		TH	E N	ASA	FME	A	ΙΊ	EM	IS	T	HE	- #	REA	D	? ]	O	LATCH	IND	ICA	T.	ION

CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294,

4313 THRU 4316, AND 4335 THRU 4338.

NASA DATA:

ASSESSMENT DA' ASSESSMENT ID NASA FMEA #:	TE: 1/30/8 RMS-42 05-6IC	8 17 -MRL-7			ra: ne [ ] ew [ X ]										
SUBSYSTEM: MDAC ID: ITEM:	RMS/EP 4217														
LEAD ANALYST:	ROBINS	ON													
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT HDW/FUNC A B C															
	FLIGHT HDW/FUNC A B C														
NASA [ 3 IOA [ 3	/1R ] /3 ]	[ P ] [ ]	[ P ] [ ]	[ P ] [ ]	[ ] *										
COMPARE [															
RECOMMENDATIO	ons: (If	differe	nt from NA	SA)											
. [	/ 1	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)										
* CIL RETENT	ION RATION	ALE: (If	applicabl	.e) ADEQUA INADEQUA											
IOA SCREENS. BURNOUT AND	SUBSEQUE COULD LEAD AILURE OF LOSS OF CR	NT MULTI TO INAE THE GUII EW/VEHIO	SILITY TO S LOTINE/JET CLE. THIS 4217. 421	SAFELY LATO TTISON SYSTONE NASA 18, 4251,	TEM WHICH FMEA CORRESPONDS										

4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH

NASA POST 51L FMEA.

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	D. I #:	ATE: D:	1/30/ RMS-4 05-6]	/88  21  C-	8 MR	L <del>-</del> 7						ASA DA BASELI N	NE			
SUBSYSTIMDAC ID	EM:				PD	&C											
LEAD AND	ALY	ST	:	ROBIN	SO	N											
ASSESSMI	ENT	:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																	
HDW/FUNC A B C																	
NASA [3/1R] [P] [P] [] * IOA [3/3] [] [] [] []																	
COMPARE	(		/N	]	[	N	]	[	N	]	[	N	]		[	]	
RECOMMEN	IDAT	CIC	ons:	(If	đ:	Ĺfí	fere	nt 1	rc	m	NASA)						
	[		/	]	[		]	[		]	ſ			( <b>A</b> D	[ D/DI		TE)
* CIL RE	TEN	TI	ON F	RATION	ALE	E:	(If	app	li	.ca	ble)						
REMARKS: IOA CONC IOA SCRE BURNOUT	URS ENS AND	). (	OULD:	LEAD	TC	MU I	NABI	LT.TT	FA V	LLU TO	OA CR URES	III CO	ULD CA	IR US	E MC	OTO	D
SUBSEQUE	NT	FA	ILUR	E OF	CHE	G	UILI	OTI	NE	<b>/</b> JI	ETTIS	ON	SYSTE	M	WHIC	:H	

COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS

TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH

REPORT DATE 03/02/88 C-160

NASA POST 51L FMEA.

ASSESSME ASSESSME NASA FME	ENT ENT EA	ATE:	1/2 RMS 05-	5/88 -4219 6IC-N	) IRI	L-11							INE NEW	[			
SUBSYSTE MDAC ID:				421	/EPD& .9 ISTO		R25										
LEAD ANA	ALY:	ST	:	ROE	BINSO	N											
ASSESSMI	ENT	:															
	CR					RI	EDUND	ANC	CY	SCI	REENS	3			CIL		
CRITICALITY REDUNDANCE FLIGHT HDW/FUNC A  NASA [ 3 /3 ] [ N ] [ IOA [ 3 /3 ] [ ] [												C					
NASA IOA	[	3	/3 /3	]	]	N	]	]	N	]	[	N	]		[	]	*
COMPARE	[		/	]	ι	N	]	[	N	]	[	N	]		[	]	
RECOMME	NDĄ	TI	ONS	:	(If d	if	ferer	nt :	fr	om 1	NASA	)					
	[		/	]	[		3	[		]	[		]	(A	[ DD/I	) DELE	TE)
* CIL R	ETE	NT	ION	RAT:	IONAL	E:	(If	ap	pl.	ica		A.		ATE ATE		]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH	E. TYF 1 F SON	E WD	1, /MI IOA	RESI: D/AF' REC	STORS T PEC OMMEN	ES DS	EVEI TAL ( COMI	NT CIR BIN	IN CU IN 27	DII IT G T 5 T	CATI COMP HE F	ON ON OL 42	", A ENTS LOWI 78.	ND 1 . F NG 1 4297	OR OA I	FME!	\s: \s:

ASSESSM ASSESSM NASA FM	ENT ENT EA	, [     	ATE:	1, RI 0!	/25/ MS-4 5-6I	88 220 C-MI	RL-11			,		DATA ELINE NEW			
SUBSYST MDAC ID ITEM:	EM:			RI 42	4S/E 220	PD&0									
LEAD AN	ALY	SI	<b>!:</b> '	RO	BIN	SON									
ASSESSM	ENT	:													
	CR	IT	ICAL	ITY	SCI	REENS			CII						
	,					P	<b>\</b>	В		(	С		ITE	EM	
NASA IOA	[	3	/3 /3	]		]	]	[	]	[	]		[	]	*
COMPARE	[		/	]		[	]	[	]	[	]		(	]	
RECOMME	NDA'	ΓI	ons:		(If	dif	fere	nt fro	om 1	NASA)					
	(		/	]		[	]	[	]	[	]	(Al	[ DD/D		TE)
* CIL R	ETEI	T	ION :	RAT	'ION?	ALE:	(If	appli	icak		ADEQU	ATE ATE	[	]	
REMARKS:		TT-1	ur M	<b>3 C 3</b>	PMI	73 T	mew 1	C "T	IDT						
NO ISSUIDRIVER SYSTEM COMPARIS 4219 THE	L FV SON, RU 4	E VD,	1, R /MID IOA : 34,	ESI /AF REC 425	STOR T PR OMME 3 TR	rs & Edes Ends Iru	EVEN TAL C COME 4256.	T INI CIRCUI SINING 4275	OIIC TT C TH	CATION COMPON IE FOI IRU 42	I", A IENTS LOWI	ND IN FONG IO	NCLU DR DA F	MEA	<b>5:</b>
REQUIRE	ASS	SE:	SSME	NT.	.041		43	, T. T	r PIE	NYS MI	ın J	/ 3 CE	CTT	ו טע	AO.I.

ASSESSME ASSESSME NASA FME	INT INT IA #	DA II	ATE:	1/2 RMS 05-	25/8 5-42 -6IC	8 21 -MI	RL-1:	1				nasa D Basel		[ x	]	
SUBSYSTEMDAC ID:	EM:			RM3	5/EP 21	D&C										
LEAD ANA	/LYS	ST:	:	RO	BINS	ON										
ASSESSMI	ENT:	:														
								NDANC'	S	CREE	ens			CIL		
	1	HDI	LIGH W/FU	NC			A	]	3			С				
NASA IOA	[	3	/3	]		[	]	[	]		[	]		[	]	*
COMPARE	C		/	]		[	]	[	]		[	]		[	]	
RECOMME	NDA'	TI	ons:		(If	di	ffer	ent f	ron	NA:	SA)					
	[		/	]		[	)	[	]		[	1	(Al	[ DD/D		
* CIL R	ETE	NT	ION	RAT	'ION	ALE	: (I	f app	lio	abl	e)	ADEQU.	ATE ATE	[	]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REOUIRE	E. TYP 1 F SON RU IRU	E WD , 42 43	1, I /MII IOA 234,	RESI D/AF REC 425 AND	STO T P COMM 53 T 434	RS EDE ENI	& EVESTAL S CO	CIRC MBINI	ND. UI' NG 75	CO THE	MPC FC	NENTS OLLOWI 1278.	. FONG IO	OR OA F THR	MEZ	As: 4300,

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4222 05-6IC-MRL	-11		NASA DATA BASELINE NEW	: [ ] [ X ]
MDAC ID:	RMS/EPD&C 4222 RESISTOR,	R33			
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICALI FLIGHT	ITY RE	DUNDANCY	SCREENS	;	CIL
	NC A	В		С	ITEM
NASA [ 3 /3 IOA [ 3 /3	] [	] [ ] [	] [	]	[ ] *
COMPARE [ /	) (	] [	] [	]	[ ]
RECOMMENDATIONS:	(If diffe	erent fro	om NASA)		
[ /	] [ ]	] [	] [	] (AD	[ ] D/DELETE)
* CIL RETENTION R	RATIONALE:	(If appli		ADEQUATE ADEQUATE	[ ]
REMARKS: NO ISSUE. THE NA DRIVER TYPE 1, RE SYSTEM 1 FWD/MID/ COMPARISON, IOA R 4219 THRU 4234, 4 4319 THRU 4322 AN	SISTORS & E AFT PEDESTA ECOMMENDS ( 253 THRU 42	EVENT IND AL CIRCUI COMBINING 256. 4275	DICATION DIICATION T COMPONENTHE FOR	N CIRCUIT N", AND IN NENTS. FO LLOWING IO	- HYBRID CLUDES R A FMEAs:

ASSESSMI ASSESSMI NASA FMI	ENT ENT	D2 II #:	ATE:	1/: RM: 05:	25/8 S-42 -6IC	8 23 -MRI	L-11				ASA DAT BASELIN NE			]	
SUBSYSTI MDAC ID: ITEM:	:			42			EVER,	AR4							
LEAD AN	ALYS	ST	:	RO	BINS	ON									
ASSESSMI	ENT	:													
FLIGHT REBONDINGS STEELS												IL TEM	Ī		
FLIGHT I HDW/FUNC A B C													•		
NASA IOA	[	3	/3 /3	]		[	]	[	]			]			k
COMPARE	[		/	]		[	]	[	]	[	]	(		]	
RECOMME	NDA'	ΓI	ons:	}	(If	dif	feren	t fr	om NA	SA)					
	[		/	]		[	]	[	1	[	]	] IDA)	)/DI		re)
* CIL R	ETE	NT	ION	RAT	ION	ALE:	(If	appl	icabl	e) A INA	DEQUAT DEQUAT	E [ E [		]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH	E. TYP 1 F SON	E WD	1, I /MII IOA	RESI D/AF REC	STO T P COMM	RS & EDES ENDS HRU	EVEN TAL C COME	T INCU SINING 427	DIICA IT CO G THE 5 THR	TION MPON FOL U 42	ENTS. LOWING 78, 42	INC FOF IOF	CLUI R A FI THRU	DES MEA J 4	s: 300,

ASSESSM ASSESSM NASA FM	ENT ENT EA	' [ ' ]	DATE [D:	: 1/ RM 05	'25/8 IS-42 I-6IC	8 24 -MR	L-11				NA E	SA DAT BASELII NI	TA: NE [ EW [ ]	] x ]	
SUBSYST MDAC ID ITEM:	em:			42	24			, AR4							
LEAD AN	ALY	SI	? <b>:</b>	RC	BINS	ON									
ASSESSM	ENT	:													
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
	,	HD	W/F	UNC		A		В			С				
NASA IOA	[ [	3	/3	]		[ [	]	[ [	]				] [	]	*
COMPARE	[		/	]		[	]	[	]	(	•	]	[	]	
RECOMMEN	IDA'	ΓI	ONS	:	(If o	lif	fere	nt fro	om I	NASA	۲)				
	[		/	]	1	[	]	[	]	[		] (	[ ADD/D	] ELET	ſE)
* CIL RI	ETE	NT	ION	RAT	IONA	LE:	(If	appl	ical	_	AD:	EQUATE EQUATE	[	]	
REMARKS:		_												_	
NO ISSUE DRIVER T SYSTEM 1	YPI . FV	E VD	1, I /MII	RESI D/AF	STORS T PEI	S & DEST	EVEI	NT IND CIRCUI	OIIC	CATI COMP	ON"	, AND	INCLU FOR	DES	
COMPARIS 4219 THE 4319 THE	ON A	, 42 43	IOA 34, 22 <i>1</i>	REC 425 AND	OMMEN 3 THF 4341	IDS RU 4	COM1 256	BINING . 4275	TI TI	HE F HRU	OLL 427	OWING	IOA F	TT 43	เกก

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4225 05-6IC-MR	L-11			NA B	SA DATA: ASELINE NEW	x ]	]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4225 HYBRID DR	IVER,	AR10					
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICAL FLIGH	ITY R	EDUNDA	NCY	SCREE	NS		CIL	
HDW/FU	NC A		В		С			
NASA [ 3 /3 IOA [ 3 /3	] [	]	]	]	[	]	[	] <b>*</b> ]
COMPARE [ /	] [	]	[	]	[	1	[	]
RECOMMENDATIONS:	(If di	fferent	fro	m NAS	SA)			
[ /	] [	]	[	3	[	] (A	[ DD/D	] ELETE)
* CIL RETENTION	RATIONALE	: (If a	appli	icable	≥) A INA	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE. THE DRIVER TYPE 1, 1 SYSTEM 1 FWD/MIN COMPARISON, IOA 4219 THRU 4234, 4319 THRU 4322	RESISTORS D/AFT PEDE RECOMMEND	& EVEN STAL C S COMB	I INI IRCUI ININ	IT COL G THE	MPON FOL	ENTS. F LOWING I	OR OA F	MEAs: QU 4300,

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4226 05-6IC-M	RL-11			,	BASEL	ATA: INE [ NEW [ ]	]					
SUBSYSTEM:	RMS/EPD&6 4226 HYBRID D	С											
LEAD ANALYST:	ROBINSON												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C													
		,											
IOA [ 3 /3	j	j	[	] 1	[	]	[ [	] * ]					
COMPARE [ /	] [	]	[	]	[	]	[	]					
RECOMMENDATIONS:	(If dif	feren	t fr	om NA	SA)								
1 /	] [	]	[	]	[	]	[ (ADD/D						
* CIL RETENTION F	RATIONALE:	(If a	appl	icable	A	DEQUAT	TE (	]					
NO ISSUE. THE NADRIVER TYPE 1, RESYSTEM 1 FWD/MID/COMPARISON, IOA F4219 THRU 4234, 44319 THRU 4322 AND FOULTH ACCOUNTY	SISTORS & AFT PEDES ECOMMENDS 253 THRU	TAL CI COMBI	I INI [RCU] [NING 4275	DIICAT TOMESTHE	TION TPON FOL	", AND ENTS. LOWING	FOR FOR	DES MEAs:					

ASSESSMEI ASSESSMEI NASA FME	NT NT A #	DA ID	TE:	1/2 RMS 05-	25/8 5-42 -6IC	8 27 -MRL	-11				SA DATA BASELINE NEW		]
SUBSYSTEM MDAC ID:				422	27		VER,	AR5					
LEAD ANA	LYS	ST:	}	ROI	BINS	ON							
ASSESSME	NT:	:											
	CR]					RE	DUND	NCY	SCREE	NS		CIL	
	I		LIGH V/FU			A		В		С			-
NASA IOA	[	3	/3 /3	]		[	]	[	]	[ [		[ [	
COMPARE	[		/	]		[	]	[	]	[	]	[	]
RECOMMEN	DA!	ri	ons:		(If	dif	ferent	t fro	om NAS	SA)			
	[		/	)		[	J.	[	1	[	] (2	[ ADD/D	] ELETE)
* CIL RE	TE	NT:	ION	RAT	IONA	ALE:	(If	appl:	icable	e) Al INA	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE DRIVER T SYSTEM I COMPARIS 4219 THE 4319 THE	YP FON	E WD	1, F /MIC IOA	RESI PAF REC	STOR T PROMMIN	RS & EDES' ENDS	EVEN' TAL C COMB	r in ircu: inin 427	DIICA: IT COI G THE 5 THRI	PION MPON FOL	", AND ENTS. LOWING 78, 429	FOR IOA F	MEAs: W 4300,

ASS ASS NAS	SESSMI SESSMI SA FMI	ENT ENT EA	#:	ATE:	1/ RN 05	/25/ <b>(</b> S-4 5-6I	88 228 C-1	B MRI	<b>-11</b>					SA DA ASELI N	NE			
SUI	SSYSTI AC ID:	EM:			RN 42	1S/E 228	PD	&C		, ARS								
LEA	AD ANA	ALY	ST	:	RC	BIN	SO	1										
ASS	SESSMI	ENT	:															
			F	LIGH	${f T}$					DANCY		REEN				CII		
				W/FU						E			С					
	NASA IOA	[	3	/3 /3	]		[		]	[	]	[	· :	]		[	]	*
COM	IPARE	[		/	]		[		]	[	]	[		]		[	]	
REC	OMMEN	IDA!	ΓI	ons:		(If	di	ff	erer	ıt fr	om 1	NASA	(۱					
		(		/	]		[		)	[	]	(	•	]	(AI	[ D/D	] ELF	ETE)
	IL RE		NT.	ION :	RAT	ION	ALE	::	(If	appl	ical			TAUQE TAUQE	E E	[	]	
NO DRI	ARKS: ISSUE VER T TEM 1	YPI	₿ :	1, R	ESI	STOP	RS	& ]	EVEN	T IN	DIIC	CATI CATI	ON (	CIRCU	IT IN	- H	YBR	ID
421 431	PARIS 9 THR 9 THR UIRE	ON , U 4 U 4	, 12: 13:	IOA 1 34, 4 22 Al	REC 425 ND	OMMI 3 TH	END IRU	S (	COME 256.	ININ 427	G TH 5 TH	HE F HRU	OLLC	WING	IO 97	AF.	ft 4	300
1/11/2	OTVE	<b>uo</b> :	) E	20MP1	AT.													

ASSESSME ASSESSME NASA FME	NT NT A #	DA ID	TE:	1/25 RMS-	5/88 -4229 6IC-MRI	L-11			N.	ASA BASE	DATA: LINE NEW	[ x	]	
SUBSYSTE MDAC ID:	:M:			RMS, 422: HYB	/EPD&C 9 RID DR	IVER	, AR13	3						
LEAD ANA	'TAS	ST:		ROB	INSON									
ASSESSME														
		TO T	TOU	TT.	R				EENS			CIL		
	1	HDV	/FU	NC	A		В		C	:				
NASA IOA	[ [	3	/3 /3	]	[	]	[	]	[	]		[	]	*
COMPARE	[		/	]	[	]	[	1	[	]		[	]	
RECOMME														
	[		/	]	[	]	ſ	]	[	]	(A)	[ DD/I	) DELE	TE)
* CIL R	ETE	NT	ION	RATI	ONALE:	(I:	f appl	ical	ole) IN	ADEQ'	UATE UATE	[	]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REQUIRE	E. TYF 1 F SON RU IRU	E WD 1, 42	1, 1 /MI IOA 34, 22	RESIS D/AFS RECO 425 AND	TORS OF PEDES	TAL CO	CIRCU MBININ	IDII IIT ( IG T)	COMPO HE FO	NENT LLOW	S. FING I	OR OA TH	FMEA	\s: \300

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4230 05-6IC-MR	L-11		]	NASA D BASEL	INE	: [ [ X	]	
	RMS/EPD&C 4230 HYBRID DR	IVER, AI	R13						
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
FLIGHT			Y SCR	EENS			CIL		
	C A		В	_	2			•	
NASA [ 3 /3 IOA [ 3 /3					]		]	]	*
COMPARE [ /	] [	] [	]	[	]		[	]	
RECOMMENDATIONS:	(If diff	erent f	rom N	ASA)					
[ /	) [	] [	]	(	3	(AD	[ D/DE	] :Le	TE)
* CIL RETENTION RA	ATIONALE:	(If app	licab	Le) A INA	DEQUAT DEQUAT	PE PE	[	]	
REMARKS: NO ISSUE. THE NAS DRIVER TYPE 1, RES SYSTEM 1 FWD/MID/A	SISTORS & AFT PEDEST	EVENT II AL CIRCI	NDIICA	ATION ATION	CIRCU ", AND	JIT -	- HY	BR:	
COMPARISON, IOA RI 4219 THRU 4234, 42 4319 THRU 4322 ANI REQUIRE ASSESSMENT	ECOMMENDS 253 THRU 4 24341 THR	COMBINI) 256, 42 U 4344.	NG THE	FOL	LOWING	IO	A FM		

ASSESSME ASSESSME NASA FME	ENT ENT EA #	DA II	TE:	1/2 RMS 05-	5/8 -42 -6IC	8 31 -MRL	-11				SA DATA ASELINE NEW		]	
SUBSYSTEMDAC ID:	EM:			RMS 423	5/EP 31	D&C AR4F								
LEAD AN	ALYS	ST:	1	ROI	BINS	ON								
ASSESSMI	ENT:	:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
FLIGHT HDW/FUNC A B C														
NASA IOA	[	3	/3 /3	]		[	]	[	]	[		[	] *	
COMPARE	[		/	1		[	]	[	]	[	]	[	]	
RECOMME	NDA'	TI	ONS:	:	(If	diff	erent	t fr	om NAS	SA)				
	ſ		/	]		[	]	[	]	[	] (A	[DD/DI	] ELETE)	
* CIL R	ETE	NT	ION	RAT	ION	ALE:	(If	appl	icable	e) Ai INA	DEQUATE DEQUATE	[	]	
DRIVER SYSTEM COMPARI	E. TYP 1 F	E WD	1, 1 /MII	RESI D/AF REC	STO T P	rs & Edes' Ends	EVEN TAL C COMB	T IN IRCU ININ	IT COL	MPON FOL	CIRCUIT ", AND I ENTS. I LOWING I 78, 4291 TH 3/3 (	FOR FOAF THR	MEAs: U 4300,	

ASSESSM ASSESSM NASA FM	ENT ENT EA	D I #:	ATE: D:	1/25/ RMS-4 05-6I	88 232 C-MR	RL-11			:	NASA D. BASEL		[	x	]	
SUBSYST MDAC ID ITEM:	LM:			RMS/E 4232 FUSE,	PD&C	•									
LEAD AN	ALY	ST	:	ROBIN	SON										
ASSESSM	ENT	:													
	CR		ICAL LIGH	ITY	R	EDUNI	DANC	SCR	EENS			CI	_		
	]			NC	A		F	3	(	2		IT	'EM		
NASA IOA	[	3 3	/3 /3	]	[	]	[	]	[	]		[		]	*
COMPARE	[		/	]	[	]	[	]	Į	]		[		]	
RECOMMEN	NDAT	ric	ons:	(If	dif	feren	t fr	om N	ASA)						
	[		/	]	[	]	£	]	[	]	(AD		DE		TE)
* CIL RE		T)	ON 1	RATION	ALE:	(If	appl	.icab	A	DEQUAT		[		]	
REMARKS: NO ISSUE DRIVER T	E. TYPE	: ]	L, RI	ESISTOF	RS &	EVEN	s "I T IN	NDIC	ATION ATION	CIRCU	UIT O IN	- 1 CLI	HYI	3R. ES	ID

SYSTEM 1 FWD/MID/AFT PEDESTAL CIRCUIT COMPONENTS. FOR COMPARISON, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4219 THRU 4234, 4253 THRU 4256, 4275 THRU 4278, 4297 THRU 4300, 4319 THRU 4322 AND 4341 THRU 4344. FMEAS WITH 3/3 CRIT DO NOT REQUIRE ASSESSMENT.

ASSESSME ASSESSME NASA FME	ENT ENT EA #	DA II	ATE:	1/2 RMS 05-	5/8 -42 6IC	8 33 -MRL	-11			N.	ASA D BASEI		[	]	
SUBSYSTE MDAC ID:				RMS 423 FUS	3		'1								
LEAD AND	ALYS	ST	:	ROE	BINS	ON									
ASSESSMI	ENT:	:													
	CRI			LITY		RE	EDUND	ANCY	SCI	REENS			CIL		
	1			JNC		A		В		C	•				
NASA IOA	[	3	/3 /3	]		[	]	[	]	[	]		[	] *	
COMPARE	[		/	1		[	]	Į.	]	[	]		[	]	
RECOMME	NDA'	TI:	ONS	:	(If	dif:	ferer	nt fr	om	nasa)					
	C		/	1		ſ	]	[	3	(	]	(A	DD/I	] ELET	E)
* CIL R	ETE	NT	NOI	RAT	ION	ALE:	(If	appl	ica		ADEQU ADEQU			]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH	E. TYP 1 F	E WC	1, /MI IOA	RESI D/AF REC	STO T P	RS & EDES ENDS	EVEI TAL ( COM)	NT IN CIRCU BININ	DII IT G I	HE FO	N", A NENTS LLOWI 278.	ND I F NG I 4297	OR OA I	FMEAS RU 4:	s: 300,

ASSESSMI ASSESSMI NASA FMI	ent Ent Ea	' [ ' I	DA'	TE:	1, Ri 0.	/25/ MS-4 5-6I	88 234 C-MI	RL-11				NASA BASI	ELINE		]	
SUBSYSTEMDAC ID	EM:				RI 4:	MS/E 234 USE,	PD&C	2								
LEAD AND	<b>ALY</b>	ST	:		R	OBIN	SON									
ASSESSMI	ENT	:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																
FLIGHT ITEM HDW/FUNC A B C														34.1		
NASA IOA	HDW/FUNC A B C  NASA [3/3] [] [] [] *  IOA [3/3] [] [] [] []														*	
COMPARE	[		/	•	]		[	]	[	]	(	)		[	]	
RECOMMEN	DA'	ri(	ON	s:		(If	dif	fere	nt fr	om 1	NASA	)				
	[		/	•	]		[	]	[	1	[	]	(AI	[ DD/D		TE)
* CIL RE		YT:	IO	N I	RAT	'IONA	LE:	(If	appl	icak	-	ADEQU NADEQU	ATE ATE	[	]	
NO ISSUE DRIVER T SYSTEM 1 COMPARIS 4219 THR 4319 THR	YPI FV ON, U 4	VD,	M [0 34 22	ID/ A F , 4	AF EC 25	STOR T PE OMME 3 TH 4341	S & DEST NDS RU 4 THI	EVEI FAL ( COMI	NT IN CIRCU BININ 427	DIIC IT C G TH	CATION PORTOR OF THE PORTOR OF	ON", A ONENTS OLLOWI 1279	ND IN FONG IO	CLU R A F	DES MEA:	s:

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	1/24/8 RMS-42 05-610	8 235 C-MRL-4		NASA DATA BASELINE NEW	
SUBSYSTEM:	RMS/EI 4235	PD&C RELAY,			
LEAD ANALYST:	ROBINS	ON			
ASSESSMENT:					
		REDUN	DANCY SCRE	EENS	CIL ITEM
	HT UNC	A	В	С	
NASA [ 3 /3 IOA [ 3 /3	R] R]	[ P ] [ ]	[ P ] [ NA]	[ P ] [ NA]	[ ] *
COMPARE [ /	1	[ N ]	[ N ]	[ N ]	[ ]
RECOMMENDATION	: (If	differe	ent from N	ASA)	
			[ ]	r 1	[ ] ADD/DELETE)
* CIL RETENTIO	N RATION	IALE: (I	f applicab	le) ADEQUATE INADEQUATE	[ ]
REMARKS: NO ISSUE. IOA CONCURS WI BE 1-P-P. TO COMBINING THE 4235, 4237, 42 4285, 4301, 43 IOA FMEAS ARE SYSTEM 1 AND S	COMPARE FOLLOWIN 39, 4241 03, 430	WITH TH NG 24 IO L, 4257, 5, 4307,	E NASA FME A FMEAs: 4259, 426 4323, 432	4201, 4203, 61, 4263, 427 65, 4327, AND	4205, 4207, 9, 4281, 4283, 0 4329. THE RELAYS USED BY

PORT AND STARBOARD ARMS.

ASSESSMEN ASSESSMEN NASA FME	NT	Ι	D:	1, RI 0!	/30/ MS-4 5-6I	88 23 C-	6 MR	L-5	5									A: E [ V [ ]		
SUBSYSTEM MDAC ID: ITEM:	1:			4:	MS/E 236 YBRI				<b>?,</b> 1	<b>K</b> 5	5								-	
LEAD ANAI	LYS	ST	:	RO	BIN	SO:	N													
ASSESSMEN	T:	:																		
c		F	ICAL LIGH W/FU	T					NDA						s C			CII		
NASA IOA	[ [	3	/1R /2R	]		]	P	]		[	P N	] A]						[	]	*
COMPARE	[		/N	]		[	N	]		[	N	]		E	N j	)		[	]	
RECOMMEND	ΑT	IC	ons:		(If	di	ff	er	ent	. 1	iro	om	NAS	A)						
	[		/	]		[		]		[		]		[	]	l		[ DD/D:		TE)
* CIL RET	EN	TI	ON F	TAS	IONA	LE	:	(I:	f a	pp	li	.ca	ble							
REMARKS: NO ISSUE.														IN	ADE	QUA QUA	TE TE	[	]	
IOA CONCUE BE 1-P-P.																				
COMBINING 4258, 4260 THE 12 IOA STARBOARD	), A 1	4 FM	280, EAs	42 ARI	71NG 282, E FO	4 R	2 30: 6	10 <i>F</i> 2, Inf	430 1000 1000	ME 04 10	As , IIA	43;	42	02	, 4	204	, 42	236,		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4237 05-6IC-MR	L-4		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4237 HYBRID RE	LAY, K69			
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
	ITY R			-	CIL ITEM
HDW/FU	INC A				
NASA [ 3 /1F IOA [ 3 /2F	e] [P	) [	P ]   NA]	[ P ] [ NA]	[ ] *
COMPARE [ /N					
RECOMMENDATIONS	(If dif	fferent	from NAS	A)	
[ /	] [	] [	1	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If ap	plicable	) ADEQUATE INADEQUATE	[ ]
REMARKS: NO ISSUE. IOA CONCURS WIT BE 1-P-P. TO C COMBINING THE F 4235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE F SYSTEM 1 AND SY PORT AND STARBO	OMPARE WITH OLLOWING 2- 9, 4241, 4- 3, 4305, 4 OR 12 PORT STEM 2, FW	H THE NA 4 IOA FM 257, 425 307, 432	EAs: 42 9, 4261, 3, 4325,	101, 4203, 4 4263, 4279 4327, AND	1205, 4207, 9, 4281, 4283 4329. THE ELAYS USED BY

ASSESSM ASSESSM NASA FM	ENI ENI EA	; ; ;	DATE:	1, RI 05	/30/ <b>/</b> IS-4 5-6I	88 23 C-	8 MR	L-5						N	IASA BASE	LINE				
SUBSYST MDAC ID ITEM:	EM:			RN 42	MS/E 238 ZBRI	PD	&C													
LEAD AN	ALY	ST	:	RC	BIN	so	N													
ASSESSMI	ENT	:																		
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT HDW/FUNC A B C																			
		HD	W/FU	NC			A			В				C						
	[	3 3	/1R /2R	]		[	P	]	]	P N	] A]		[	P N	] A]		[	]	*	
COMPARE	[		/N	]		ĺ	N	]	[	N	]		[	N	]		[	]		
RECOMMEN	IDA:	ric	SNC:		(If	di	f1	ere	nt	fro	m	NAS	SA)	)						
	[		/	]		[		]	[		]		£		J	(AD	[ D/D		TE)	
* CIL RE	TEN	<b>1T</b> ]	ON F	TAS	IONA	LE	::	(If	apı	oli	.ca	able	<u>.</u> )							
REMARKS:										•				AI IAI	DEQUA DEQUA	TE TE	[ [	]		
IOA CONC BE 1 - P COMPARE 4202, 42 THE 12 IO STARBOAR	URS WIT 04,	H 4 FM	THE 236, EAs	NAS 42 ARE	SA F 238, E FO	ME ME 4 R	ио А. 25 6	COI 8, 4 IND	MBIN 4260 IVII	.NI IE ), )UA	NG TH 42 L	E F 80,	E OL	FC	LLOW: WING	ING 12	IOA IOA	FMI		

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMEN ASSESSMEN NASA FMEA	IT IT 1 #	DA ID :	TE:	1/24/ RMS-4 05-6I	′88  23  C-	9 MRI	J-4						SA DAT ASELIN NE	ΙE			
SUBSYSTEM MDAC ID:	ſ:				PD	&C											
LEAD ANAI	LYS	T:		ROBIN	150	N											
ASSESSMEN	1T:																
C	CRI			TY		RI	EDUN	DANC	Y	SCR	EENS	3			CIL ITEM		
	H		IGH? /FUI	1C		A			В			С					
NASA IOA	[	3	/IR /2R	]	]	P	]	[ [	P N	] <b>A</b> ]	]	P NA	]		[ [	]	*
COMPARE	[		/N	]	(	N	]	[	N	]	[	N	]		[	]	
RECOMMENI	DAT	יוכ	ns:	<b>(</b> I:	f d	if:	fere	ent :	Er	om N	IASA)	)					
	[		/	1	[		]	[		]	[		1	(AE	[ D/DE	} ELE	ETE)
* CIL RE	TEI	T	ON :	RATIO	IAN	E:	(II	f ap	p1	icak	ole) Il	A A	DEQUATI	E E	]	]	
REMARKS: NO ISSUE IOA CONC BE 1-P-P COMBININ 4235, 42 4285, 43 IOA FMEA SYSTEM 1	URS 37 01	T(I	CO E FO 4239 4303	MPARE LLOWI , 424 , 430	WI NG 1, 5,	TH 24 42 43	THI 102 57, 07,	E NA: A FM: 425 432	SA EA 9, 3,	FMI 5: 426 432 ARBO	EA, 420 51, 25, DARD	10, 42, 43, H	4203, 63, 42 27, AN YBRID	79, D 4 REI	205, 428 1329 LAYS	42 31, US	207, 4283, THE SED BY

PORT AND STARBOARD ARMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/16/88 RMS-4240 05-6IC-MRL-6	5	NASA DATA BASELINE NEW											
	RMS/EPD&C 4240 HYBRID RELAY													
LEAD ANALYST:	ROBINSON													
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
HDW/FU	С													
NASA [ 2 /IR IOA [ 3 /2R	[ P ]	[ F ]   [ NA]	P] NA]	[ X ] *										
COMPARE [ N /N	) [ N ]	[и]	N ]	[ N ]										
RECOMMENDATIONS:	(If differ	ent from NASA	<b>v</b> )											
[ /	] [ ]	[ ] [	] (A)	[ ] DD/DELETE)										
* CIL RETENTION	RATIONALE: (I													
REMARKS:		I	ADEQUATE NADEQUATE	[ ]										
NO ISSUE.  IOA CONCURS WITH BE 1 - P - P. IO. COMPARE WITH THE 4206, 4208, 4240	A RECOMMENDS NASA FMEA. C , 4242, 4262,	COMBINING THE OMBINE THE FO 4264, 4284.	FOLLOWING 6 14286. 4306	IOA FMEAS TO IOA FMEAS:										
THE 12 IOA FMEAS	WE LOK 9 IN	DIVIDUAL PORT	AND 6 IND	LAIDUAL										

STARBOARD HYBRID RELAYS FOR RELEASING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4241 05-6IC-MR	L-4		NASA DATA: BASELINE NEW	[	
SUBSYSTEM: MDAC ID:						
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
FLICH	ITY R			NS	CIL ITEM	
HDW/FU	NC A			С		
NASA [ 3 /IR IOA [ 3 /2R						
COMPARE [ /N	] [ N	[	и ]	[ N ]	[	]
RECOMMENDATIONS:	(If dif	ferent i	from NAS	A)		
1 /	] [	] [	1		[ DD/DI	] ELETE)
* CIL RETENTION	RATIONALE:	: (If ap	plicable	e) ADEQUATE INADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4309 IOA FMEAS ARE FO SYSTEM 1 AND SYSTEM 1 AND SYSTEM 1 AND SYSTEM 1	OMPARE WITH OLLOWING 24 9, 4241, 43 3, 4305, 43 OR 12 PORT STEM 2, FW	H THE NAME OF THE	SA FMEA, EAs: 42 9, 4261, 3, 4325, STARBOAR	201, 4203, 4 4263, 4279 4327, AND RD HYBRID RE	205, , 42; 4329 LAYS	4207, 81, 4283 . THE USED BY

ASSESSME ASSESSME NASA FME	ENT ENT EA	' D' I	ATE: D:	2, RI 0!	/16/ MS-4 5-61	88 24 C-	2 MR	L-6								ASA DAT BASELIN NE	E	[ ;	X	]	
SUBSYSTE MDAC ID: ITEM:	EM:			4:	MS/E 242 YBRI				, I	(5	7										
LEAD ANA	LY	ST	:	R	DBIN	SO	N														
ASSESSME	ENT	:																			
		F	ICAL LIGH	T					NDA			sc	REF	ENS				CII ITI		í	
	,	HD	W/FU	NC			A				В				С						
NASA IOA	[	2 3	/1R /2R	]		[	P	]		[	F N2	] }]		[	P N	] <b>A</b> ]		[ }	K	]	*
COMPARE	[	N	/N	]		[	N	]		]	N	]		[	N	]		[ ]	1	3	
RECOMMEN	'DA'	ri	ons:		(If	đ:	ifí	fer	ent	: 1	fro	m	NAS	A)							
	[		/	]		[		]		[		]		[				[ D/E			TE)
* CIL RE	TE	NT:	ION I	RAI	ION	LI	Ξ:	<b>(I</b> :	f a	pr	ol i	ica	ble	)							
REMARKS:														IN	AI IAI	DEQUATE DEQUATE		[		]	
IOA CONC BE 1 - P	URS -	Ρ.	. I	TH OA	E PO	SI MM	r 5 IEN	IL IDS	CR CO	II ME	C SIN	F	3/1 G T	R. HE	E	IOA SCI	REI NG	ENS IC	; A	SH F	OULI

D TO COMPARE WITH THE NASA FMEA. COMBINE THE FOLLOWING 6 IOA FMEAS: 4206, 4208, 4240, 4242, 4262, 4264, 4284, 4286, 4306, THE 12 IOA FMEAS ARE FOR 6 INDIVIDUAL PORT AND 6 INDIVIDUAL STARBOARD HYBRID RELAYS FOR RELEASING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4243 05-6ID-2	3 2127-1		NASA DATA: BASELINE NEW	[ x ]
20D2IDIDI.	RMS/EPD& 4243 RELAY, F				
LEAD ANALYST:	ROBINSON	1			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDANC	Y SCREENS	3	CIL ITEM
:	NC	A	В	С	
NASA [ 2 /1F IOA [ 3 /2F		P ] [	P ] [ NA] [	P ] NA]	[ X ] *
COMPARE [ N /N	] [	и ] [	N ] [	N ]	[ N ]
RECOMMENDATIONS:	(If d	ifferent f	rom NASA)	)	
[ /	] [	] [	] [	P ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If app		ADEQUATE NADEQUATE	[ ]
REMARKS: NO ISSUE. RECOMMENTHE IOA FMEA FOR THE MANIPULATOR SET OF NASA FMEA DO NOT MATCH WHIPOSITION LATCHIN	R FAILURE RETENTIO AS ALSO A EN COMPAR NG RELAYS	OF THESE IN LATCH CO IND THEREFORED. THE DESCRIPTION OF THE DESCRIPTIO	A FMEA TO RELAYS WI ONTROL CI ORE THE R RELAYS AR AR IN BOT	CRITICALI AS GENERAT RCUIT WHIC ESULT OF T	TY 2/1R. ED AS PART OF H IS 05-61C HE FAILURES 2 H CONTROL AND

FAILURE.

THE JETTISON/GUILLOTINE CIRCUITS. IOA CONCURS WITH THE NASA

ASSESSME ASSESSME NASA FME	14/ IS-4 -6I	88 24 D-	4 21	30	) <b>-</b> 1							ASA BAS	EL	INE	<b>:</b> [							
SUBSYSTE MDAC ID:	M:			RM 42 RE	S/E 44 Lay	PD	&C K8	0														
LEAD ANA	LY	ST	:	RO	BIN	SO	Ŋ															
ASSESSME	NT	:																				
		F	ICAL LIGH	Г						AN	CY	s	CREE	NS	3				CII			
	]	HD	W/FU	NC			A				В				С							
NASA IOA	[	3 3	/3 /2R	]		]	P P	]		[	P N2	) <b>\</b> ]		]	P Na	] <b>A</b> ]			[	]	*	
COMPARE	[		/N	]		[		]		[	N	]		[	N	]			[	]		
RECOMMEN	DA'	ric	ons:		(If	đi	Ĺfí	fe	rent	t 1	fro	om	NAS	A)								
	[	3	/2R	]		[		]		[		]		[	P	]			[ DD/E		ETE)	
* CIL RE	TEI	(TV	ION I	TAS	IONA	LE	E:	(	If a	app	ol i	.ca	ble	)								
REMARKS:													:			EQU EQU				]		
RECOMMENT COMPONENT	D (	JPO	GRADI	NG	THE	N	IAS	A	FME	EA	TC	3	/2R	•	RE	CON	ME	ND	COM	BIN	ING	
THE IOA I THE MANII SET OF NA DO NOT MA POSITION	FME PUI ASA ATC	EA LAT A F CH	FOR FOR F FMEAS WHEN	FAI RETH AI	LUR ENTI LSO OMPA	E ON AN	OF ID	A'. Ti	THES TCH HERE	E CC FC	RE NT RE	RO T	YS V L C HE H	IR RE	CU SU	IT LT	WH OF	ICH TH	IS E F	05 AIL	-6I URE	s
THE JETT	ISC	)N/	'GUII	LOI	INE	C	IR	C	JITS		I	OA	CON	IC	UR	S W	IIT!	H T	HE	NAS	Д	WTIA F

FAILURE.

NASA DATA:

ASSESSMI ASSESSMI NASA FMI	ent ent ea ‡	D# II :	ATE:	1/: RM: 05:	8 45 -M	irl	-7A								DATA: ELINE NEW	[	]		
SUBSYST	EM:			RM:	S/EP	D8	kC												
LEAD AN			:	RO	BINS	10	1												
ASSESSM	CR	IT:	ICAL	C					DANG	CY B			NS				CIL		
	)	HDV	/FUI	AC.			A			D				C					
NASA IOA	]	3	/1R /3	]		[	P	]	[	P	]		[	P	]		[	]	*
COMPARE	[		/N	)		[	N	]	[	N	]		[	N	]		[	]	
RECOMME	NDA'	ri	ons:		(If	d:	ifí	ere	nt :	fro	mc	NAS	A)						
	[		/	]		[		]	[		]		[		]		[  D/DI		
* CIL R	ETE	NT.	TON	RAT	TONA	LI	E:	(If	ap	pl:	ica	ble	:)						
							-	•	•				I	A IA	DEQ <sup>1</sup>	UATE UATE	[	]	
REMARKS UPGRADE MULTIPL INABILI GUILLOT COULD R CORRESP 4267, 4 RECOMME TO ALLO	IO.E F.TY INE ESU OND 268	AI TO /J LT S	LURE SAF ETTI IN TO T 4289 OMBI	S C ELY SON LOS HE , 4 NIN	OULI LAT SYS SOI FOLI 290	D ( FC) F ( LO)	CAU H : EM CRI WII 43: L:	JSE THE EW/V NG I 11, ISTE	MOTORMS EHI OA 431 D I	OR AI CLI FMI 2, OA	BU ND E. EAs 43 FM	THE SUBSECTION OF THE SUBSECTI	SSI SSI SSI SSI SSI SSI SSI	e i Eqi Eqi Eqi Il Ani	AND UEN ONE , 4 D 4 TO	COULD T FAI: NASA 212, 334. ONE	D LE. LURE FME. 4245	AD O: A	TO F THE

ASSESSMI ASSESSMI NASA FMI	ASSESSMENT DATE: 1/30/88 ASSESSMENT ID: RMS-4246 VASA FMEA #: 05-6IC-MRL-72														ASA I BASEI	LINE		]	
SUBSYSTI MDAC ID: ITEM:	EM:			42	S/E1 46 SE,														
LEAD AND	ALY	ST	:	RO	BINS	501	N												
ASSESSMI	ENT	:																	
		F	ICAL LIGH	ידי						CY	s	CREE	:N:	S			CIL		
	]	HDI	/FU	NC			A			E	3			С					
NASA IOA	[	3 3	/1R /3	]		[	P	]	[	F	]		[	P	]		]	]	*
COMPARE	[		/N	]		[	N	]	[	N	]		[	N	]		[	]	
RECOMMEN	IDA!	ric	ons:		(If	đ	iff	ere	ent	fr	om	NAS	A)	)					
	[		/	]		[		]	[		]		[		]	(AI	[ DD/D		
* CIL RE	÷	Y <b>T</b> ]	ON 1	RAT:	IONA	LI	Ξ:	(I:	f ap	pl	ic			AI IAI	DEQUA DEQUA	TE TE	[	]	
UPGRADE MULTIPLE INABILIT GUILLOTI	IOA FA	AII CO	LURES SAF	S CO	ILUC LAI	CE	I I	JSE	MOT	OR	BI	URNO	נט	C #	AND C	OULI	LE	AD	TO
COULD RECORRESPONDED 4267, 42 RECOMMENTO ALLOW	NDS 868 IDS	5 1 , 4 CC	TO TI 1289 MBII	HE 1 , 4: NINC	FOLI 290, 3 AI	OW 4 LL	VIN 31 LI	IG ] .1, :STE	IOA 431 ED I	FM 2, OA	EA: 4: FI	s: 4 333, MEAs	21 4 [	LI, ANE INI	421 433 O ON	2, 4 4.	245	. 4	246,
								1	******	*	JJ.	- JT		T. I.	···				

ASSESSME ASSESSME NASA FME	17	RL	-12								SA DAT ASELIN NI	1E	[ [ x	]						
SUBSYSTE MDAC ID: ITEM:				RMS, 424 RES	7			R29												
LEAD ANA	LYS	T:	;	ROB	INS	ОМ	i													
ASSESSME	NT:																			
	RE	DUN	DAI	10	Y	SC	REE	NS	5			CIL								
	F		LIGH V/FU	NC			A				В				С					
NASA IOA	[	3	/3 /3	]		[ [	N	]		[	N	]		[	N	]		[	]	*
COMPARE	[		/	1		[	N	1		[	N	]		[	N	]		[	]	
RECOMMEN	IDA!	ΓI	ons:	(	If	di	Ĺfí	fere	ent	1	fro	mc	NAS	SA	)					
	[		/	]		•		]		[		1		[		3	(A)	[ DD/D		ETE)
* CIL RI	ETE	NT:	ION	RATI	ONA	L	Ξ:	(I1	f a	p	<b>p1</b> :	ica	able			DEQUAT DEQUAT			]	
REMARKS NO ISSUITE CIRCUITE IOA FME	E.	TM	נו שנ	उद्याद्ध स्ट	TIT	יסו	F 1	MODI	E A UAL	S	."! CO:	ERI MP	RONI ONE	EO YT	US S.	TO LAT	CO	MPAF	RIS	ON

PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSM	SESSMENT DATE: 1/25/88 SESSMENT ID: RMS-4248 SA FMEA #: 05-6IC-MRL-1														A DAT. SELIN NE		x	]	
SUBSYST				42	S/EPD 48 SISTO			55											
LEAD AND	ALY	ST	:	RO	BINSO	N													
ASSESSMI	ENT	:																	
		F	ICAI LIGH W/FU			R A		NDA	M	CY B	SC	REEN	s c			_	IL TEM	ſ	
NASA IOA	[	3	/3 /3	]	]	N	]		]	N	]	[	N	]		[		]	*
COMPARE	ι		/	]	[	N	]		[	N	]	[	N	]		[		]	
RECOMMEN	IDA:	ric	ons:		(If d	if	fer	ent	f	ro	om 1	NASA	)						
	[		/	]	ί		]		[		]	[		]	( <i>2</i> A	[ \DD,	/DE	] LE	TE
* CIL RE					[ONAL]					li		-	IAI	EQ	UATE UATE	[		]	

THE NASA FMEA ITEM IS THE "READY TO LATCH INDICATION CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4249 05-6IC-MRI	L-12		NASA DATA: BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4249 RESISTOR,	R28			
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL FLIGH		EDUNDANCY	SCREENS	5	CIL ITEM
HDW/FU		В		С	
NASA [ 3 /3 IOA [ 3 /3	] [ N	] [ N	] [	N ]	[ ] *
COMPARE [ /	] [N	] [ N	] [	N ]	[ ]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA	)	
[ /	] [	] [	] [	] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE NADEQUATE	
REMARKS:	aca muma Ti	MEN TO MU		-	. ,

NO ISSUE. THE NASA FMEA ITEM IS THE "READY TO LATCH INDICATION CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSME ASSESSME NASA FME	250		L-1:	2							A DATA SELINE NEW	[							
SUBSYSTE MDAC ID:				42	S/EI 50 SIST			R6	1										
LEAD ANA	LY	ST	:	RO	BINS	501	V												
ASSESSME	NT	:																	
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C												CI:	-						
	1	HDI	W/FU	NC			A				В			C					
NASA IOA	]	3 3	/3 /3	]		]	N	]		[	N	]	[	N	]		[ [	]	*
COMPARE	[		/	]		[	N	]		[	N	]	[	N	]		[	]	
RECOMMEN	DA:	ric	ons:		(If	đ	ifi	fer	ent	: 1	fro	om 1	NASA	)					
	(		/	]		[		]		[		]	[		]	(A		DEL	ETE)
* CIL RE	TEI	T'	ION	RAT	IONA	ALI	€:	(I:	fa	pp	oli	cal	•			QUATE QUATE		]	
NO ISSUE	•	TI	HE N	ASA	FME	EA	IJ	CEM	IS	7	CHE	E "E	READ	Z :	го	LATCH	INI	DIC	ATIO

CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMEN ASSESSMEN NASA FMEA	IT DA IT II 1 #:	ATE: D:	1/30 RMS- 05-6	/88 4251 IC-M	RL-	7					ASEL		[ x		
SUBSYSTEM MDAC ID:	<b>4</b> :		RMS/ 4251	ELD#	C										
LEAD ANA	LYST	:	ROBI	NSON	Ī										
ASSESSME															
•	CRIT	CAL	ITY		REI	OUNDAN	CY	SCI	REEN	S			CIL ITE		
		LIGH W/FU			A		В	,		С					
NASA IOA	[ 3	/1R /2R	]	[	P	] [ ] [	F N	[A]	[ [	P NA	]		[	] *	
COMPARE		/N				] (				N			[	)	
RECOMMEN	DAT:	ions:	(	If d	iff	erent	fı	com	NASA	.)					
	[	/	]	[		].	[	]	ſ		]	(A	[ .DD/D	] ELET	E)
* CIL RE	ETEN'	TION	RATI	ONAL	E:	(If a	pp:	lica	ble)	A NA	DEQU DEQU	IATE IATE	[	]	
REMARKS: IOA CONC IOA SCRI BURNOUT SUBSEQUI	EENS	. SI	LD LE	EAD T	O I	NABIL	IT	Y TO	OA ( JURES SAI	CRI S C FEL	T TO OULI Y LA	3/1 CAU ATCH	IR AN JSE N THE ( WH)	ID CO NOTOR RMS LCH	RRECT AND PONDS

COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH

NASA POST 51L FMEA.

ASSESSM ASSESSM NASA FM SUBSYST: MDAC ID ITEM: LEAD AND	ENT EA # EM:	ID:	1/30/ RMS-4 05-61 RMS/E 4252 RESIS	252 C-MI SPD&C	:			NASA D BASEL	INE	[ ] [ x ]
ASSESSMI	ENT:									
	1	FLIGHT	נ	R A		DANC	CY SCR B	<b>EENS</b> C		CIL TEM
NASA IOA		3 /1R 3 /2R	]	[ P	]	]	P ] NA]	[ P ] [ NA]	[	] *
COMPARE	[	/N	]	[ N	]	[	и ј	[ N ]	[	]
RECOMMEN	DATI	ons:	(If	dif	fere	nt f	rom N	ASA)		
	[	/	].	[	]	[	]	[ ]	[ADD	] /DELETE)
* CIL RE REMARKS:							licab	le) ADEQUAT INADEQUAT		]

OA CONCURS WITH NASA FMEA. UPGRADE IOA CRIT TO 3/1R AND CORRECT IOA SCREENS. SUBSEQUENT MULTIPLE FAILURES COULD CAUSE MOTOR BURNOUT AND COULD LEAD TO INABILITY TO SAFELY LATCH THE RMS AND SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH NASA POST 51L FMEA.

ASSESSME ASSESSME NASA FME	TN: NT :A #	DA ID	TE:	1/2 RMS 05	25/8 5-42 -6IC	8 53 -MRL	-11			ħ	NASA 1 BASE1	DATA: LINE NEW	: [ [	x	]	
SUBSYSTE MDAC ID:	M:			RM:	5/EP 53											
LEAD ANA	LYS	T:		RO	BINS	ON		•								
ASSESSME	ENT:	3														
	CRI		CAL LIGH			DANCY	SCF	REENS				IL PEN				
	F					A		В		(	С					
								[			]		[		]	*
COMPARE	[		/	]		[	1	[	]	[	]		[		]	
RECOMME	NDA!	ric	ons:		(If	diff	fere	nt fr	om 1	NASA)						
	[		/	]		[	]	[	]	[	]	(A	DD.	/D	] ELE	TE)
* CIL R	ETE:	NT:	ION	RAT	IONA	ALE:	(If	appl	ical	ole) IN	ADEQU ADEQU	ATE IATE	[		]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH	E. TYP 1 F SON	E WD,	1, I /MII IOA	RESI D/AF REC	STOI T PI OMMI	RS & EDES' ENDS	EVE TAL COM	NT IN CIRCU BININ 427	DII IT ( G T)	CATIO COMPO HE FO HRU 4	NENTS LLOWI	ND 1 5. F NG 1 4297	OR OA	F: HR	MEA U 4	) \s: \300

ASSESSM ASSESSM NASA FM	ENT ENT EA	' [ ' I	A: D	re:	1 R 0	/25/ MS-4 5-61	88 254 C-MR	L-11				NASA BASE			_	
SUBSYST	EM:				R:	MS/E 254	PD&C									
LEAD AN	ALY	ST	<b>':</b>		R	OBIN	SON									
ASSESSMI	ENT	:														
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C														CIL		
	HD	W/	/FU	NC				С								
NASA IOA	[ [	3 3	/	′3 ′3	]		[	]	[	]				[	]	*
COMPARE	[		/	,	. ]		[	]	[	1	[	]		[	]	
RECOMMEN	IDA'	TI(	ON	is:		(If	dif	feren	t fro	om NA	SA)					
	[		/	,	]		[	j	[	]	C	]	(AI	[ D/D:		TE)
* CIL RE	TE	NT:	IC	N 1	RAI	NOI	ALE:	(If	appli	icabl	e)					
											TN	ADEQUA ADEQUA	TE TE	[	]	
REMARKS:																
NO ISSUE	'YPI	Ξ :	l,	R1	ESI	STOF	RS &	EVEN	T IND	DIICA	rto	N". AN	אד מו	CTIT	YBR: DES	ID .
SYSTEM 1	. FV	۸D,	/ M	ID,	/AF	T PE	EDEST	CAL C	IRCUI	T CO	MPO	NENTS.	FC	P		
COMPARIS	:U 4	12.	34	, 4	125	3 TH	IRU 4	1256.	4275	ואות כ	T 4	278 4	297	THDI	T 4	200
4319 THR	U 4	132	22	Al	ND	4341	THE	RU 43	44.	FMEA:	s W	ITH 3/	3 CR	IT I	00 1	TOP

ASSESSMI ASSESSMI NASA FMI	ATE ):	: 1/2 RMS 05-	5/88 -4255 6IC-MR	L		N		DATA: LINE NEW		[ ]				
SUBSYSTIMDAC ID:	EM:			RMS 425	/EPD&C									
LEAD AN	ALYS	ST	:	ROE	INSON									
ASSESSMI	ENT	:												
	CR			LITY HT	R	EDUN	NDANCY	SCF	REENS			CII		
	I				A		В		(					
NASA IOA	[	3 3	/3 /3	]	[	]	[	]						
COMPARE	[		/	]	[	]	[	]	[	]		[	]	
RECOMME	NDA!	ric	ONS	: '(	If dif	fere	ent fr	om 1	NASA)					
	[		/	]	[	]	[	]	[	]	(Al		DELI	ETE)
* CIL R	ete:	NT:	ION	RAT]	ONALE:	<b>(I</b> 1	f appl	icak	ole) IN	ADEQU ADEQU	JATE JATE	[	]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH	E. TYP: 1 F' SON RU	E WD,	1, /MI IOA 34,	RESIS D/AFT RECO	STORS & PEDES MMENDS THRU	EVI TAL COI	ENT IN CIRCU MBININ 6, 427	DII( IT ( G TI 5 TI	CATION COMPON HE FON HRU 4	N", A NENTS LLOWI 278,	AND II 5. F ENG I 4297	NCLI OR OA I THI	UDE: FME: RU	S As: 4300

ASSESSMI ASSESSMI NASA FMI	ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4256 NASA FMEA #: 05-6IC-MRL-11										ASA DATA BASELINE NEV	-	
SUBSYST	EM:			RM 42	IS/EP	D&C							
LEAD AN	ALY	ST	<b>':</b>	RC	BINS	ON							
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
												115	M
NASA IOA	NASA [ 3 /3 ] [ ] [ ] [ ] [ ] IOA [ 3 /3 ] [ ] [ ]											[	] <b>*</b> ]
COMPARE	[		/	]		[	]	[	]	[	]	[	]
RECOMME	NDA'	TI	ONS	:	(If	diff	eren	t fro	om NA	SA)			
	[		/	]		[	]	[	1	[	] (2	[ \DD/D	] ELETE)
* CIL R	ETE:	NT	ION	RAT	'IONA	LE:	(If	appli	icable	A	DEQUATE	[	]
DRIVER SYSTEM COMPARIS	INADEQUATE [ ] EMARKS: DISSUE. THE NASA FMEA ITEM IS "INDICATION CIRCUIT - HYBRID RIVER TYPE 1, RESISTORS & EVENT INDICATION", AND INCLUDES USTEM 1 FWD/MID/AFT PEDESTAL CIRCUIT COMPONENTS. FOR DMPARISON, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 219 THRU 4234, 4253 THRU 4256, 4275 THRU 4278, 4297 THRU 4300, 319 THRU 4322 AND 4341 THRU 4344. FMEAS WITH 3/3 CRIT DO NOT												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4257 05-6IC-MRI	L-4	NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTEM:	RMS/EPD&C 4257 HYBRID RE								
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
CRITICAL	ITY R	EDUNDANC	Y SCREEN	S	CIL ITEM				
	NC A		В	С					
NASA [ 3 /1R IOA [ 3 /2R	] [P	] [	P ] [ NA] [	P ] NA]	[	] <b>*</b>			
COMPARE [ /N									
RECOMMENDATIONS:	(If dif	ferent i	from NASA	)					
. [ /	] [	] [	] [	] (A)	[ DD/DE	] LETE)			
* CIL RETENTION	RATIONALE:	: (If ap)	plicable) I	ADEQUATE	[	]			
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4300 IOA FMEAS ARE FO SYSTEM 1 AND SYS PORT AND STARBOX	OMPARE WITH OLLOWING 24 9, 4241, 43 3, 4305, 43 OR 12 PORT STEM 2, FW	H THE NA 4 IOA FM 257, 425 307, 432	EAs: 420 9, 4261, 3, 4325,	11, 4203, 4 4263, 4279 4327, AND	205, , 429 4329	4207, 81, 4283 . THE USED BY			

ASSESSM ASSESSM NASA FM	30/88 NASA DATA: S-4258 BASELINE [ ] -6IC-MRL-5 NEW [ X ]																
SUBSYST MDAC ID ITEM:	EM:			RMS 425	/EPD	&C	!										
LEAD AN	ALY	ST	<b>:</b>	ROB	INSO	N											
ASSESSM	ENT	:															
		F	ICAL LIGH	T		R	EDUI	NDAN			REEN				CII	_	
HDW/FUNC A B C  NASA [3/1R] [P] [P]  IOA [3/2R] [ ] [NA] [NA]														11.1			
NASA IOA	[	3	/1R /2R	]	]	P	]	]	P N	] <b>A</b> ]	[	P NA	]		[	]	*
COMPARE	[		/N	]	[	N	]	[	N	J	(	N	]		[	]	
RECOMMEN	IDA:	ric	ONS:	()	f di	.f1	ere	nt	fro	om 1	NASA)						
	[		/	]	[		]	(		]	[		]	(AI	[ DD/D:	] ELEI	
* CIL RE	TEN	T]	ON F	CITAS	NALE	:	(If	apı	pli	.cak							
REMARKS:											IN	AD AD	EQUA' EQUA'	TE TE	[	]	
IOA CONC BE 1 - P COMPARE 4202, 42 THE 12 I STARBOAR	URS WIT 04, OA	H 4 FM	THE 236, EAs	NASA 423 ARE	FME. 8, 4 FOR	и А. 25 6	CO 8,	OMBI MBIN 4260 TVTF	.NI IE ),	NG THE 428	THE FOL	FO LO	LLOW: WING	ING 12	IOA IOA	FME FME	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4259 05-6IC-MRL-4		NASA DATA: BASELINE NEW	_
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4259 HYBRID RELAY, I	K78		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL FLIGH	CIL ITEM			
HDW/FU	С			
NASA [ 3 /1F IOA [ 3 /2F	R ] [ P ] R ] [ ]	[ P ] [ NA]	[ P ] [ NA]	* [ ]
COMPARE [ /N	[и]	[ ]		
RECOMMENDATIONS:	: (If differen	t from NAS	A) .	
[ /	] [ ]	[ ]	[ ] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable	ADEQUATE	[ ]
BE 1-P-P. TO COMBINING THE FOR 4235, 4237, 4234285, 4301, 43010A FMEAS ARE FOR SYSTEM 1 AND SY	H THE POST 51L COMPARE WITH THE OLLOWING 24 IOA 9, 4241, 4257, 4305, 4307, 430	FMEAS: 42 1259, 4261, 1323, 4325,	201, 4203, 4 4263, 4279 4327, AND	205, 4207, , 4281, 4283, 4329. THE LAYS USED BY

PORT AND STARBOARD ARMS.

ASSESSMENT DATE: 1/30/88 ASSESSMENT ID: RMS-4260 NASA FMEA #: 05-6IC-MRL-5								5								DATA LINE NEW					
SUBSYST MDAC ID ITEM:				42	S/E: 60 BRI:				ζ,	<b>K</b> 7	8										
LEAD AN	ALY	ST	<b>':</b>	RO	BINS	SO	N														
ASSESSM	ENT	:																			
		F	ICAL LIGH	T			R	EDU	IND.	AN	CY	so	CREI	EN	S			CIL	-		
HDW/FUNC A B C																					
NASA IOA	[	3 3	/1R /2R	]		]	P	]		ן נ	P N	] <b>A</b> ]		[	P NA	] A]		[	]	*	
COMPARE	[		/N	]		[	N	]		[	N	]		[	N	]		[	]		
RECOMMEN	IDA!	ric	ons:	(	(If	di	f	fer	ent	= 1	fro	m	NAS	A)	)						
	[		/	)		[		]		[		]		[		]	(AI	[ D/D		TE)	
* CIL RE	TE	T]	ION I	RATI	ONA	LE	:	(I	fa	ıpp	li	.ca	ble	:)							
REMARKS:														IN	AD	EQUA EQUA	TE TE	[	]		
NO ISSUE IOA CONC BE 1 - P COMPARE 4202, 42	URS WIT	г. ҮН 4	THE 236.	NAS 42	A F.	ME ME	NL A. 25	CO R	MOC AMC	IN	NI E	NG TH	TH E F	E OL	FO LO	LLOW	ING	IOA IOA	FM FM	EAs EAs	
THE 12 I	UA	L L	LEAS	AKL	FO.	ĸ	6	TNI	στν	ID	UA	L	POR	T	AN	D 6	INDI	VID	JAL		

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4261 05-6IC-M	1/24/88 NASA DATA: RMS-4261 BASELINE [ ] 05-6IC-MRL-4 NEW [ X ]							
SUBSYSTEM:		С							
LEAD ANALYST:	ROBINSON	ī							
ASSESSMENT:									
CRITICA FLIG	ITY	REDUNDAN	ICY SCREE	ens	CIL ITEM				
HDW/F									
NASA [ 3 /1] IOA [ 3 /2]	[	] *							
COMPARE [ /N	] [	и ]	[и]	[и]	[	]			
RECOMMENDATIONS	(If d	ifferent	from NAS	5 <b>A</b> )					
[ /	] [	]	[ ]	[ ] (A	[ .DD/DE				
* CIL RETENTION	RATIONAL	E: (If a	pplicable	e) ADEQUATE INADEQUATE	[	]			
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO COMBINING THE FEW A235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE FESYSTEM 1 AND SY	OMPARE WI OLLOWING 9, 4241, 3, 4305,	TH THE N 24 IOA F 4257, 42 4307, 43	ASA FMEA MEAs: 4 59, 4261 23, 4325 STARROA	201, 4203, 4 , 4263, 4279 , 4327, AND	1205, 9, 428 4329. ELAYS	4207, 31, 4283 THE USED BY			

PORT AND STARBOARD ARMS.

ASSESSMENT DATE: 2/16/8 ASSESSMENT ID: RMS-42 NASA FMEA #: 05-610							/16/88 NASA DATA: IS-4262 BASELINE [ ] IS-6IC-MRL-6 NEW [ X ]														
SUBSYSTIMDAC ID:	EM:			RM 42	IS/E	PD	&C														
LEAD AND	ALY	ST	:	RC	BIN	SO	N														
ASSESSMI	ENT	:																			
FLIGHT														LL PEN							
HDW/FUNC A B C												•		•							
														[	X	]	*				
COMPARE	[	N	/N	]		[	N	]		[	N	]	(	1	4 ]		[	N	]		
RECOMMEN	IDA'	TI	ons:		(If	đ:	if1	fer	ent	1	fro	om	NASA	(۱							
	[		/	]		[		j		[		]	[		]	(AI	[ /ac	'DE		TE	Ξ)
* CIL RE	TE	NT:	CON 1	RAT	IONA	<b>ALI</b>	S :	(I:	f a	þķ	oli	.ca	able)				_				
REMARKS:																					
IOA CONC BE 1 - P TO COMPA FMEAs: THE 12 I	OA CONCURS WITH THE POST 51L CRIT OF 3/1R. IOA SCREENS SHOULD E 1 - P - P. IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS COMPARE WITH THE NASA FMEA. COMBINE THE FOLLOWING 6 IOA MEAS: 4206, 4208, 4240, 4242, 4262, 4264, 4284, 4286, 4306, HE 12 IOA FMEAS ARE FOR 6 INDIVIDUAL PORT AND 6 INDIVIDUAL TARBOARD HYBRID RELAYS FOR RELEASING.																				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4263 05-6IC-MRL-4		NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD&C 4263 HYBRID RELAY,			
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL FLIGH	CIL ITEM			
HDW/FU	С			
NASA [ 3 /1R IOA [ 3 /2R	[ P ] [ ]	[ P ] [ [ NA] [	P ] NA]	[ ] *
COMPARE [ /N	] [ N ]	[и]	N ]	[ ]
RECOMMENDATIONS:	(If differen	t from NASA	)	
[ /	] [ ]	[ ] [	] (AI	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable)	ADEQUATE NADEQUATE	[ ]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4303 IOA FMEAS ARE FO SYSTEM 1 AND SYSTEM	MPARE WITH THE DLLOWING 24 IOA 0, 4241, 4257, 4 3, 4305, 4307, 4 DR 12 PORT AND 1 STEM 2, FWD, MII	RIT OF 3/1R NASA FMEA, FMEAs: 420 259, 4261, 323, 4325, 2 STARBOARD O, AND AFT L	. IOA SCRI IOA RECOMMI 1, 4203, 42 4263, 4279, 4327, AND 4	EENS SHOULD ENDS 205, 4207, , 4281, 4283 4329. THE LAYS USED BY

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/16/88 RMS-426 05-6IC-	4 MRL-6		NASA DATA BASELINE NEW	•							
SUBSYSTEM: MDAC ID: ITEM:	4264	&C RELAY, K	76									
LEAD ANALYST:	ROBINSO	N										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITE HDW/FUNC A B C												
	_											
NASA [ 2 /1R IOA [ 3 /2R	] [	[P] [F] [P] [ ] [NA] [NA]										
COMPARE [ N /N	] [	<b>n</b> ]	[и]	N ]	[ N ]							
RECOMMENDATIONS:	(If d	ifferent	from NASA)	ı								
[ /	] [	]	[ ] [	] (AI	[ ] DD/DELETE)							
* CIL RETENTION F	RATIONALI	E: (If an	oplicable)									
		•	-	ADEQUATE IADEQUATE	[ ]							
REMARKS:				~~~~~~~~~~	. ,							
NO ISSUE.  IOA CONCURS WITH  BE 1 - P - P. IO  TO COMPARE WITH THEAS: 4206, 420  THE 12 IOA FMEAS	DA RECOMN THE NASA 18, 4240,	MENDS CON FMEA. ( , 4242, 4	MBINING THE COMBINE THE 1262, 4264.	FOLLOWING FOLLOWING 4284. 428	F IOA FMEAS F 6 IOA F 6 4306							

STARBOARD HYBRID RELAYS FOR RELEASING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4265 05-6ID-2126-1	ra: ve [ ] ew [ x ]	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4265 RELAY, K77		
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUNI	DANCY SCREENS	CIL ITEM
	NC A	ВС	
NASA [ 2 /1R IOA [ 3 /2R	[ ] *		
COMPARE [ N /N	] [ N ]	[ N ] [ N ]	[ N ]
RECOMMENDATIONS:	(If differen	nt from NASA)	
. [ /	] [ ]	[ ] [P]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUAT INADEQUAT	'E [ ]
THE IOA FMEA FOR THE MANIPULATOR	R FAILURE OF THE RETENTION LATE AS ALSO AND THE	IOA FMEA TO CRITICA ESE RELAYS WAS GENER H CONTROL CIRCUIT WH REFORE THE RESULT OF	ICH IS 05-61C THE FAILURES

DO NOT MATCH WHEN COMPARED. THE RELAYS ARE 4 POLE, 2 POSITION LATCHING RELAYS AND APPEAR IN BOTH THE LATCH CONTROL AND THE JETTISON/GUILLOTINE CIRCUITS. IOA CONCURS WITH THE NASA FAILURE.

ASSESSME ASSESSME NASA FME	ENT I ENT I EA # :	DATE: ID: :	2/14, RMS-6	/88 4266 ID-21	29-1	L			NASA BASE	LINE		; ] ]	
SUBSYSTE MDAC ID: ITEM:	EM:			EPD&C									
LEAD ANA	LYSI	r:	ROBIN	NSON									
ASSESSME	NT:												
	F	LIGH	r					REENS	5		CIL		
		-	NC				В		С				
NASA IOA	[ 3	/3 /2R	]	[ P	]	[	P ] NA]	[ [	P ] NA]		[	] <b>*</b>	
COMPARE	[	/N	]	[	]	[	N ]	[	N ]		[	3	
RECOMMEN	DATI	ons:	(If	dif	fere	nt f	rom N	ASA)					
	[ 3	/2R	]	[	3	ξ	]	C	P ]	(AD	[ )D/D]	] ELETE	<b>)</b>
* CIL RE	TENT	ION E	RATION	ALE:	(If	app	licab						
REMARKS:								IN	ADEQUA ADEQUA	TE	[	•	
RECOMMENI COMPONENT THE IOA I	FMEA	FOR	FAILU	S 426 RE OI	6 Al	ND 4: ESE 1	332. Retav	с ша	S CENE	ים חיג סי	ר א כ	ים גם י	
SET OF NAME OF NAME OF NOT MARKET OF MARKET OF THE PROPERTY OF	ASA ATCH LAT(	TOR F FMEAS WHEN CHING	ALSO COMP RELA	AND ARED. YS AN	ATCI THEI TI ID AI	H COI REFOI HE RI PPEAI	NTROL RE THI ELAYS R IN 1	CIR E RE ARE	CUIT W SULT O 4 POL	HICH F TH E, 2	IS E FA	05-61 AILURI	IC ES
THE JETTI FAILURE.	ISON,	/GUII	LOTIN	E CIR	CUIT	rs.	IOA	CONC	URS WI	TH T	HE N	IASA	พทุก

ASSESSME ASSESSME NASA FME	TN TN A #	DA ID	TE:	1/3 RMS 05	30/88 5-420 -6IC	3 67 - <b>M</b>	RL	-71	A								DAT: LIN: NE	E	( x			
SUBSYSTE MDAC ID:	M:			RM:	S/EP	D&	C															
LEAD ANA	LYS	ST:		RO	BINS	ON	ī															
ASSESSME	NT:	:																				
	CRI		CAL LIGH				RE	DU	NDA	NC	Y	SC	REE	NS	3				CIL ITEM			
	I	HDW	i/FU	NC			A				В				С							
NASA IOA	[	3	/1R /3	]		]	P	]		[ [	P	]		[ [	P	]			[		*	
COMPARE	[		/N	]		[	N	]		[	N	]		[	N	]			[	]		
RECOMMEN	1DAʻ	TI	ons:		(If	d:	if1	fer	ent	<b>.</b> :	fro	om	NAS	A)	)							
	(		/	]		[		]		[		]		[		1	(		[ DD/DI			)
* CIL R	ETE	NT:	ION	RAT	NOI	L	E:	(1	f	ap)	pl	ica	able	:) I	A NA	DEQ DEQ	UATI UATI	E E	[	]		
REMARKS UPGRADE MULTIPLI INABILI' GUILLOT COULD R CORRESP 4267, 4 RECOMME TO ALLO	IO E F TY INE ESU ONE 268	TO JUT S S	LURE SAH ETTI IN TO 1	ES ( FEL) [SOI LOS THE	COULI LAT N SYS SS OF FOLT 4290	C F LO	EM CR WI 43	THI EW, NG	VE RIVER	MS HI A 31	CL FM 2,	ND E. EA	SUE TH S: 4 333,	SS HI H2	EQ S 11 AN	UEN ONE , 4 D 4	NA: 212 334 ONE	AII	LURE FME	OI A	F T	HE

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	' D' I	ATE:	1/ RN 05	/30/ <b>/</b> S-4 5-61	88 26 C-	8 MR	L-	·7A				N	ASA BASE	DATA LINE NEW	: ] [ K ] [	]	
SUBSYSTI MDAC ID: ITEM:	EM:			42														
LEAD ANA	ALY	ST	:	RC	BIN	SO	N											
ASSESSME	ENT	:																
		F	LIGH	T			RI	ED	UNDAN	CY	s	CREENS	S			CIL		
	;	HD	W/FU	NC			A			В			C					
NASA IOA	[	3 3	/1R /3	]		[	P	]	[	P	]	[	P	]		[	]	*
COMPARE	[		/N	]		[	N	]	[	N	]	[	N	]		[	]	
RECOMMEN	DA!	ric	ons:		(If	đi	iff	e:	rent :	fro	om	NASA)	)					
	[		/	]		[		]	[		J	[		]	(AI	[ DD/DI		TE)
* CIL RE	TE	(T	[ON ]	RAT	IONA	LE	<b>:</b>	( ]	If app	ol i	Lca							
REMARKS:												IN	IAC	EQU	ATE ATE	Ţ		
UPGRADE MULTIPLE INABILIT GUILLOTI	rr Y I NE/	O JE	SAFI STTIS	ELY SON	LAT SYS	CH TE	AU T M	'HE	E MOTO	R AN	BU ID	IRNOUT SUBSE	' A QU	ND C ENT	FAII	LEA URE	AD OF	mo.
COULD RECORRESPO	SUI NDS 68,	T 1	IN I O TH	LOSS IE 1	FOLL	OW OW	RE IN 31	G 1.	10A F	ME	AS 4 1	3: 421 33 A	1, ND	421	.2, 4	245	4	246,
TO ALLOW	CC	MF	ARIS	ON	WIT	H	TH	E	NASA	PO	SI	51L	FM	EA.	ندا			

ASSESSME ASSESSME NASA FME	NT I	D:	RMS-4	269	e MRI	L <b>-</b> 12							DATA: LINE NEW	[	]
SUBSYSTE	M:		RMS/E	PD	ķС										
MDAC ID: ITEM:			4269 RESIS	TOI	Я,	R61									
LEAD ANA	LYST	:	ROBIN	SON	1										
ASSESSME	NT:														
		ICAL: LIGH	ITY		RI	EDUN	DANC	CY	SCI	REENS	3			CIL	
			NC		A			В			С			III.	<b>M</b>
NASA IOA	[ 3	/3 /3	]	[	N	]	]	N	]	] ]	N	] ]		[	] <b>*</b>
COMPARE	[	/	]	[	N	]	[	N	]	C	N	]		[	]
RECOMMEN	DATI	ons:	(If	đi	ifi	fere	nt f	fro	om 1	NASA)					
	[	/	]	[		]	[		]	[		]	(AI	[ DD/D	] ELETE)
* CIL RE	TENT	ION 1	RATION	ALI	€:	(If	app	<b>)</b> 11	icak	•	AC IAC	EQU EQU	ATE ATE	[	]
REMARKS: NO ISSUE	. T	HE N	ASA FM	EA	IJ	ГЕМ	IS 1	CHI	E "I	READY	T	O L	ATCH	IND	ICATION

CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON

PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4270	-12		ASA DATA: BASELINE NEW	
MDAC ID:	RMS/EPD&C 4270 RESISTOR, R	R <b>41</b>			
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICALI FLIGHT	?	DUNDANCY			CIL ITEM
HDW/FUN	IC A	В	C		
NASA [ 3 /3 IOA [ 3 /3	] [N]	] [N	] [ N	]	[ ] *
COMPARE [ /	] [ N ]	] [И	] [ N	]	[ ]
RECOMMENDATIONS:	(If diffe	erent fro	m NASA)		
[ /	] [ ]	] [	] [	] (AD	[ ] DD/DELETE)
* CIL RETENTION F	RATIONALE: (	(If appli	A	DEQUATE	[ ]
REMARKS: NO ISSUE. THE NA	ASA FMEA ITE	EM IS THE	"READY	TO LATCH	INDICATIO

CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMEN ASSESSMEN NASA FME	I T	D:	1/25/8 RMS-42 05-6IC	71	RL	<del>-</del> 12						SA DATA: ASELINE NEW		]
SUBSYSTEM MDAC ID:	1:		RMS/EP 4271 RESIST			R62								
LEAD ANA	LYS:	r:	ROBINS	ON										
ASSESSME	TI:													
1		TICAL			RE	DUND	AN	CY	SCRE	ENS	;		CIL ITE	M
		FLIGH DW/FU			A			В			С			
NASA IOA	[	3 /3 3 /3	]	]	N	]	[ [	N	]	[	N	]	[	] *
COMPARE	[	/	]	[	N	1	[	N	1	[	N	]	[	]
RECOMMEN	DAT	ons:	(If	đi	Ĺfí	feren	t	fr	om NA	SA	)			
	[	/	1	ĺ		]	[		]	[		] (A	DD/D	] ELETE)
* CIL RE	ETEN	ITION	RATION	ALI	€:	(If	ap	pl	icabl			DEQUATE DEQUATE		]
REMARKS:		THE N	IASA FM	EA	ľ	rem ]	[S	TH	E "RI	EAD	Y	TO LATCH	IND	ICATIO

CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSM ASSESSM NASA FM	ENT	ID:	1/2: RMS-	5/88 -4272 6IC-M	RL-1	2				N	ASA DATA BASELINI NEV		, ] x ]
SUBSYST MDAC ID ITEM:			4272	EPD&	C								
LEAD AND	ALYS	T:	ROB	INSON									
ASSESSMI	ENT:												
		FLIGH				NDAN		SCI	REEN	5		CII	
	H	DW/ FU	NC	7	A		В			С			
NASA IOA	[ :	3 /3 3 /3	]	<b>4</b> ]	]	[	N	]	]	N	]	[	] <b>*</b>
COMPARE	[	/	]	[ N	]	[	N	]	1	N	]	[	3
RECOMMEN	IDAT:	ions:	(I	f dif	fere	ent i	fro	om N	IASA)				
	[	/	]	[	J	[		]	[		] (A	[ DD/D	] ELETE)
* CIL RE	TENT	CION :	RATIO	NALE:	(If	app	li	cab	le)				
REMARKS:										AI AI	EQUATE EQUATE	[	]
NO ISSUE CIRCUIT" IOA FMEA	s AD	DRES	THE	INDI	MODE VIDU	ΔC	44 15	DDO	NICOTI	S	O LATCH INDICAT: FOR CO	"NOI	• THE

PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS:

4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

11

NASA DATA: ASSESSMENT DATE: 1/30/88 BASELINE [ ASSESSMENT ID: RMS-4273 NEW [ X ] NASA FMEA #: 05-6IC-MRL-7 RMS/EPD&C SUBSYSTEM: 4273 MDAC ID: RESISTOR, R14 ITEM: LEAD ANALYST: ROBINSON ASSESSMENT: CIL REDUNDANCY SCREENS CRITICALITY ITEM FLIGHT в с A HDW/FUNC COMPARE [ /N ] [ N ] [ N ] RECOMMENDATIONS: (If different from NASA) [ / ] [ ] [ ] (ADD/DELETE) \* CIL RETENTION RATIONALE: (If applicable) ADEQUATE

REMARKS:

IOA CONCURS WITH NASA FMEA. UPGRADE IOA CRIT TO 3/1R AND CORRECT IOA SCREENS. SUBSEQUENT MULTIPLE FAILURES COULD CAUSE MOTOR BURNOUT AND COULD LEAD TO INABILITY TO SAFELY LATCH THE RMS AND SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH NASA POST 51L FMEA.

INADEQUATE

ASSESSMI ASSESSMI NASA FMI	ENT	I	D:	RI	/30/8 MS-42 5-610	27	-	<b>L-7</b>								ASA DA BASELI N		[	x	]		
SUBSYSTI MDAC ID ITEM:				42	MS/EF 274 ESIST			R2														
LEAD AN	ALY	ST	:	R	BINS	O	N															
ASSESSMI	ENT	:																				
		F	ICAL LIGH W/FU	T	ľ		RI A	EDUN	IDAN	10	EY B	sc	REE	:NS	s C			CI	L EM	[		
NASA IOA	[	3	/1R /2R	]		]	P	]	[	:	P NA	]		[	P NA	]		[		]	*	
COMPARE	[		/N	]		[	N	]	[	•	N	]		[	N	]		[		]		
RECOMMEN	IDA'	ri:	ons:		(If	di	if1	ere	nt	f	ro	m	NAS	A)	}							
	[		/	]		[		]	[			]		[		]	(AD	[ D/	DE	] LE	TE	)
* CIL RE	ETE	NT:	ION 1	RAI	ANOI	L	Ξ:	(If	ap	q	li	ca	ble	)			_			_		
DEMARKS.														IN		EQUAT:	E E	[		]		

IOA CONCURS WITH NASA FMEA. UPGRADE IOA CRIT TO 3/1R AND CORRECT IOA SCREENS. SUBSEQUENT MULTIPLE FAILURES COULD CAUSE MOTOR BURNOUT AND COULD LEAD TO INABILITY TO SAFELY LATCH THE RMS AND SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH NASA POST 51L FMEA.

ASSESSME ASSESSME NASA FME	NT NT A #	DA II	TE:	1/2 RMS 05-	5/8: -42 6IC	8 75 -M	RL-	-11					Ŋ	NASA I BASEI	DATA LINE WEW	: [ [	x	]	
SUBSYSTE MDAC ID:				-	1777	D&	С												
LEAD ANA	LYS	ST:	;	ROI	BINS	ON													
ASSESSME																			
			- <b>-</b> -	<b>-</b>								REE	NS				IL TEN		
	F	HDI	/FU	NC										С					
NASA IOA	[	3	/3 /3	]		[	:	]	(		]		[	]		[		]	*
COMPARE	[		/	]		[		]	(		1		[	]		[		]	
RECOMME	NDA'	TI:	ons:		(If	di	lff	ere	nt	fr	om	NAS	A)						
	[		/	]		[		]	1		]		[	3	(2	] ADE	/D	] ELI	ETE)
* CIL R	ETE:	NT	ION	RAT	ION	λLI	Ξ:	(If	a	ppl	ica	able	≥) IN	ADEQU IADEQU	JATE JATE	(		]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REQUIRE	E. TYP 1 F SON IRU IRU	E WC 42 43	1, 1 /MI IOA 34,	RESI D/AF REC 425 AND	STO T P COMM 53 T 434	RS ED! EN!	& EST DS	EVE PAL COM	CI: BI:	IN RCU NIN	IT G	CON CON THE	MPC FC	ONENTS OLLOWI	ING 429	FOF IOF	R F	ME	As: 4300

ASSESSMI ASSESSMI NASA FMI	ENT ENT EA	; [ ; ]	A' D	TE:	1, RI 05	/25/ MS-4 5-6I	88 276 C-MR	L-1:	ı			nasa Bas	DATA ELINE NEW	:	]	
SUBSYSTE MDAC ID:	EM:				RN 42	MS/E 276		!								
LEAD ANA	LY	ST	·:		RC	BIN	SON									
ASSESSME	ENT	:														
		F	L	GH	T		R: A		IDANCY B		REEN	s c		CII	_	
NASA IOA	[	3	/	′3 ′3	]		[	]	[	]	) [	]		[	]	*
COMPARE	[		/	,	]		[	]	[	]	[	]		[	]	
RECOMMEN	DA!	rI(	ON	is:		(If	dif	fere	nt fr	om 1	NASA	)				
	[		/	•	)		E	]	[	]	ί	]	(AI	[ DD/D		TE)
* CIL RE		T.	IO	N I	RAT	IONA	ALE:	(If	appl:	ical	ble) II	ADEQU NADEQU	ATE ATE	[	]	
NO ISSUE DRIVER T' SYSTEM 1 COMPARISO 4219 THRI 4319 THRI	YPE FW ON, U 4	VD/ 123	M [O 34 22	ID/ A F A AN	AF' REC 25:	STOR T PE OMME 3 TH 4341	RS & DEST INDS IRU 4 THR	EVE PAL ( COM)	NT INI CIRCUI BINING	OIIC [T C TH	CATIC COMPC HE FO	ON", A ONENTS OLLOWI	ND IN FO NG IO	ICLU: R A F	DES MEA:	s:

ASSESSME ASSESSME NASA FME	NT NT A #	DA ID	TE:	1/2 RMS 05-	5/88 -427 6IC-	3 77 -MRL	-11				ASA I BASEI		[	]	
SUBSYSTE MDAC ID:				427	7	D&C	<b>R</b> 60								
LEAD ANA	LYS	T:		ROB	INS	ON									
ASSESSME	ENT:	:													
CRITICALITY REDUNDANCY SCREENS CIL ITEM															
CRITICALITY REDONDANCE SOLUTION ITEM															
NASA IOA									]	<u>[</u>	]				*
COMPARE											]		[	]	
RECOMME	NDA'	ΤI	ONS:	;	(If	dif:	fere	nt fr	om :	nasa)					
	[		/	]		[	]	[	]	[	]	(A	[ DD/D	ELE ]	TE)
* CIL R	ETE	NT	ION	RAT	IONA	LE:	(If	appl	ica	ble) IN	ADEQU ADEQU	JATE JATE	[	]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH	E. TYP 1 F	E WD	1, /MI IOA	RESI D/AF REC	STOI T PI OMMI	rs & Edes Ends	EVE TAL COM	BININ	DII IT G I	CATIO COMPO HE FO	NENTS LLOW	ING I 4297	OR OA I	FMEARU 4	.s: .300,

ASSESSM ASSESSM NASA FM	ENT ENT EA	! ! ! :	DA [D	TE:	: 1, RI 0:	/25/ MS-4 5-6I	88 278 C-M	RL-11	L			nasa Basi	DATA LINE NEW	. <b>:</b> [ [ ;	] x ]	
SUBSYST MDAC ID ITEM:	EM:				4:	278		c , R33	3							
LEAD AN	ALY	SI	<b>:</b> 1		R	DBIN	SON									
ASSESSMI	ENT	:														
	CR	II F	'I	CAI IGH	LITY IT	ľ	I	REDUN	IDANCY	SC	REENS			CII		
							2	A	В		(	С		ITE	SM	
NASA IOA	[	3	,	/3 /3	]		[	]	[	]	[	]		[	]	*
COMPARE	[		/	/	]		[	]	[	]	[	]		C	]	
RECOMMEN	IDA <sup>(</sup>	TI	01	vs:		(If	dif	fere	nt fr	om 1	NASA)					
	(		/	•	]		[	]	[	]	[	]		[ DD/D		
* CIL RE	TE	NT	IC	N	RAT	'ION?	ALE:	(If	appl:	icak	. A	DEQU	ATE ATE	[	]	
REMARKS:		_														
NO ISSUE DRIVER T SYSTEM 1	FV	ND,	⊥, /M	R IID	ESI /AF	STOF T PE	RS & EDES	TAL (	NT INI CIRCUI	OIIC TT C	CATION	I", Al	ND IN	ICLU	DES	
COMPARIS 4219 THR 4319 THR	.U 4	ł Z .	<b>34</b>		425	3 TH	IRU	4256	. 4279	THU 7	כו זום	70	1207	MIID	TT A	200

ASSESSMEN ASSESSMEN NASA FMEN	1T 1T 4	DA ID	TE:	1/2 RMS 05	24/8 5-42 -6IC	8 79 -M	RL	,–4	ı							NA: B	sa i Asei	DATA: LINE NEW	[	]	
SUBSYSTEM MDAC ID:	1:			42	S/EP 79 BRID			ΑY	· .	K5-	4										
LEAD ANA	LYS	T:		RO	BINS	ON	i														
ASSESSME																					
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT HDW/FUNC A B C																					
CRITICALITY REDUNDANCE SCRIZZION ITEM																					
NASA IOA	[	3	/1R /2R	]		[	P	]		[ [		P NA	]		]	P NA	]		[	]	*
COMPARE																			[	]	
RECOMMEN	DA'	ric	ons:		(If	đ:	if	fe	rer	nt	f	rc	m	NA	SA	)					
	[		/	]		[		]		(			]		[		]	(A	[ .DD/D		
* CIL RE		NT:	ION	RA'	CION.	ΑL	Ε:	(	Ιf	aŗ	q	1:	ica	abl	e) I	A NA	DEQU DEQU	JATE JATE	[	]	
REMARKS: NO ISSUE IOA CONCE BE 1-P-1 COMBINIE 4235, 42 4285, 42 IOA FME SYSTEM PORT AN	E. CUR NG 237 301 As	TH , , AR	O CC E FC 4239 4303 E FC SYS	OMPA OLL O, OR OR OTE	ARE OWIN 4241 4305 12 P M 2,	G , OR F	24 42 43 T	57 07	OA	FI 42! 43:	ME 59 23	EA:	S: 4 4	261 325	20	1, 42 43	420 63, 27,	03, 4 4279 AND	205, 42, 4329	4 281 9. 5 U	207, , 4283 THE SED BY

ASSESSM ASSESSM NASA FM	ENT	' I	D:		1, RI 0!	/30/ MS-4 5-6I	′88 28 C-	O MR	L-	·5						]		SA ASE	LI		[		]		
SUBSYST MDAC ID ITEM:					RI 42	MS/E 280	PD	&C		.У, І															
LEAD AN	ALY	ST	:		RC	BIN	SO	N																	
ASSESSMI	ENT	:																							
		F	LIC	H	ľ			R	ED	UNDA	N.	CY	s	CRE	EN	S						[L [EN			
		HD	W/F	TUN	1C			A				В				C	?						•		
NASA IOA	[ [	3 3	/1 /2	LR 2R	]		[	P	]		[	P NA	] <b>A</b> ]		[	F N	A]	] ]			[		]	*	
COMPARE	[		/N	ľ	J		[	N	]		[	N	]		[	N	[ ]	)			[	N	1		
RECOMMEN	IDA:	ΓI	SNC	:		(If	đi	Ĺfí	fei	rent	1	fro	om	NAS	SA	)									
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* CIL RE	TEN	(T	[ON	R	AT	ION	ALE	: :	()	If a	pŗ	li	.ca	ble	≥)	A	DE	QUA	\TF	C	[		1		
REMARKS:															I			QUA		Ē	Ĺ		j		
IOA CONC BE 1 - P COMPARE 4202, 42 THE 12 I STARBOAR	URS WIT 04,	H 4 FM	THI 23 IEA:	E 6, s	NA: 4: ARI	SA F 238, E FO	ME 4 R	A. 25 6	8, IN	COMB COMB 426 DIV	ED 20 EN	NI E UA	NG TH 42 L	THE F 80, POR	E OI	F( LLC	OL WC	LOW	IN 1	IG .2	IO.	A A	FMI FMI		

REPORT DATE 03/02/88 C-222

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4281 05-6IC-MRL-4		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4281 HYBRID RELAY,	K56		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
FT.TCH	ITY REDUND			CIL ITEM
HDW/FU	NC A	В	С	
NASA [ 3 /1R IOA [ 3 /2R	[ P ] [ ]	[ P ] [ NA]	[ P ] [ NA]	[ ] *
COMPARE [ /N	] [N]	[и]	[ N ]	[ ]
RECOMMENDATIONS:	(If differer	nt from NAS	<b>A</b> )	
[ /	] [ ]	[ ]	[ ] (AI	[ ] DD/DELETE)
* CIL RETENTION REMARKS:	RATIONALE: (If	applicable	e) ADEQUATE INADEQUATE	[ ]
NO ISSUE.  IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4239 4285, 4301, 4303 IOA FMEAS ARE FO SYSTEM 1 AND SYS PORT AND STARBOA	MPARE WITH THE DLLOWING 24 IOA 2, 4241, 4257, 4 3, 4305, 4307, 4 DR 12 PORT AND 13 TEM 2, FWD, MII	NASA FMEA, FMEAs: 42 4259, 4261, 4323, 4325, 12 STARBOAR	IOA RECOMMI 201, 4203, 42 4263, 4279 4327, AND 4 RD HYBRID RE	ENDS 205, 4207, , 4281, 4283, 4329. THE LAYS USED BY

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-428 05-6IC-	2 MRL-5		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4282	&C RELAY, K			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDA	NCY SCREEN	īs	CIL
HDW/FU		A	В	С	ITEM
NASA [ 3 /1R IOA [ 3 /2R	] [	P ]	P ] [	P ] NA]	[ ] *
COMPARE [ /N	] [	N ]	[и]	<b>N</b> ]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from NASA	<b>v</b> )	
[ /	] [	]	. ] [	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If ap	plicable)		
			I	ADEQUATE NADEQUATE	[ ]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1 - P - P. IO COMPARE WITH THE	A RECOMM	ENDS COM	T OF 3/1R SINING THE	. IOA SCR	EENS SHOULD IOA FMEAS TO
4202, 4204, 4236 THE 12 IOA FMEAS	, 4238,	4258, 426	0, 4280,	4282, 4302	, 4304,

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4283 05-6IC-M	RL-4		NASA DATA: BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	4283	C ELAY, K66				
LEAD ANALYST:	ROBINSON	ſ				
ASSESSMENT:						
CRITICAL FLIGH		REDUNDANC	Y SCREENS	5	CIL ITEM	
HDW/FU	NC		_	С		
NASA [ 3 /1F IOA [ 3 /2F	[ [	P ] [	P ] [ NA] [	P ] NA]	[	] <b>*</b> ]
COMPARE [ /N					[	]
RECOMMENDATIONS:	(If di	ifferent f	rom NASA	)		
[ /	] [	] [	] [	] (A)	[ DD/DE	] LETE)
* CIL RETENTION	RATIONAL	E: (If app	olicable) I	ADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO COMBINING THE FOR 4235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE FOR SYSTEM 1 AND SYPORT AND STARBO	OMPARE WITCHLOWING 9, 4241, 3, 4305, OR 12 POR STEM 2, F	TH THE NAME 24 IOA FMI 4257, 4259 4307, 4320 T AND 12 SWD, MID, A	EAs: 420 9, 4261, 3, 4325,	101, 4203, 4 4263, 4279 4327, AND	205, , 428 4329.	4207, 1, 4283 THE USED BY

P P N	ASS: ASS: IAS:	ESSMI ESSMI A FMI	ENT ENT EA	; [ ; ]	DATE:	2, RI 05	/16/ MS-4 5-6I	88 28 C-	4 MR	L-6	;					1	NASA BAS	ELIN		[		]	
M	UB! IDA( TEI	SYSTI C ID: M:	EM :			42					, 1	Κ6	6										
I	EAI	D ANA	<b>Y</b> LY	ST	<b>':</b>	RC	BIN	SO	N														
A	SSI	ESSME	ENT	:																			
				F	ICAL LIGH	T					NDA	AN(	CY	sc	REEN	IS					L		
					W/FU								В				2					-	
	N	IOA	[	2 3	/1R /2R	]		]	P	]		[	F N	]	[ [	I	P] NA]			]	X	] ]	*
С	OME	PARE	[	N	/N	]		[	N	]		[	N	]	[	N	ıj			[	N	]	
R	ECC	MMEN	DA'	TI:	ons:		(If	d:	iff	ere	ent	: 1	fro	m I	NASA	.)							
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*	CI	L RE	TE	NT:	ION 1	RAT	IONA	LE	Ξ:	(I1	f a	pp	li	.cal			DEQU	JATE		[		]	
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TO FI	D C MEA HE	CONC - P OMPA s: 12 I	RE 420 0A	. W W , O6 FN	TH 1 420 MEAs	THE 08, AR	NAS 424 E FO	MM A O, R	FM 4	DS EA. 242 IND	CO.	ME CO 42 ID	IN MB 62 UA	INC INF , 4 L F	G THI E THI 4264 PORT	E E	FOLL FOLL	IIWO. IIWO.	NG NG	I 6	OA I	FI OA	MEAS
5.	LAR	BOAR	ט	H?	BRII	) R	ELAY	S	FO	R R	REL	EA	SI	NG.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4285 05-6IC-MRL-4		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C			
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL	ITY REDUNDA	ANCY SCREEN	S	CIL ITEM
FLIGH HDW/FU		В	С	
NASA [ 3 /1R IOA [ 3 /2R	[ P ] [ ]	[ P ] [ [ NA] [	P] NA]	[ ] *
COMPARE [ /N				[ ]
RECOMMENDATIONS:	(If differen	t from NASA	4)	
	] [ ]		r 1	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable;	) ADEQUATE INADEQUATE	[ ]
	OMPARE WITH THE OLLOWING 24 IOA 9, 4241, 4257, 4 3, 4305, 4307, 4 OR 12 PORT AND 1 STEM 2, FWD, MII	MASA FMEA, FMEAs: 42 259, 4261, 323, 4325,	01, 4203, 4 4263, 4279 4327, AND	205, 4207, , 4281, 4283 4329. THE LLAYS USED BY

ASSESSM ASSESSM NASA FM	ENT ENT EA	' [ ' I #:	ATE: D:	2/ RM 05	16/ S-4 -6I	88 28 C-	6 MR	L-(	5					NASA DA BASELI N		[		
SUBSYST MDAC ID ITEM:	EM:			42					ζ, :	K4-	4							
LEAD AN	ALY	ST	:	RO	BIN	SO:	N											
ASSESSMI	ENT	:																
		F	ICAL LIGH W/FU	T						ANG	CY B	SCI	REEN			CII ITE		
Maga											_			С				
IOA	[	3	/1R /2R	] ]		[	P	]		[	F N2	) [	]	P ] NA]		[ X [	: ] ]	*
COMPARE	[	N	/N	]		[	N	]		[	N	]	[	n j		( и	]	
RECOMMEN	IDA'	ric	ONS:	(	(If	đi	Ĺfſ	er	ent	: f	ro	om N	IASA)	ı				
	[		/	]		[		]		[		]	[	]	i ADI		] ELF	CTE)
* CIL RE	TEN	T	ON F	ITA9	ONA	LE	E :	(I	f a	pp	li	.cab	•					
REMARKS:													IN	ADEQUATE ADEQUATE	[		]	
IOA CONC BE 1 - P TO COMPA FMEAS: THE 12 I STARBOAR	URS RE 420 OA	WI 6, FM	TH T 420 EAs	HE 8, ARE	NAS 424 FO	riri A O, R	FM 4	DS EA 242 TNI	2,	MB CO: 42 TD:	IN MB 62	ING INE , 4	THE	FOLLOWI FOLLOWI	NG NG	10 <i>i</i>	A F	MEAS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4287 05-6ID-2	7 2128-1		NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD8 4287 RELAY, 1	&C			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
		REDUNDA	NCY SCREEN	S	CIL ITEM
FLIGH HDW/FU	T NC	A	В	С	
NASA [ 2 /1F IOA [ 3 /2F	l] [	P ]	[ P ] [ [ NA] [	P ] NA]	[ X ] * [ ]
COMPARE [ N /N	] [	и ]	[и][	n ]	[ N ]
RECOMMENDATIONS:	(If d	lifferent	from NASA	.)	
[ /	] [	]	[ ] [	P ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	LE: (If a	applicable) I	ADEQUATE NADEQUATE	[ ]
REMARKS: NO ISSUE. RECOMMENTHE IOA FMEA FOR THE MANIPULATOR SET OF NASA FMEMO NOT MATCH WHITE POSITION LATCHING.	R FAILURE RETENTIC AS ALSO A EN COMPAE NG RELAYS	E OF THES ON LATCH AND THER RED. THI S AND AP	OA FMEA TO SE RELAYS W CONTROL CI EFORE THE F E RELAYS AF PEAR IN BOT	O CRITICALI WAS GENERAT IRCUIT WHICE RESULT OF T	TY 2/1R. ED AS PART OF H IS 05-6IC HE FAILURES 2 H CONTROL AND

THE JETTISON/GUILLOTINE CIRCUITS. IOA CONCURS WITH THE NASA

FAILURE.

ASSESSM ASSESSM NASA FM	ENT ENT EA	D I #:	ATE:	2/ RM 05	14/88 S-428 -6ID-	8 ·2131	-1					ASA DA BASELI N	NE		]		
SUBSYST MDAC ID ITEM:	EM:			RM 42	S/EPD	&C											
LEAD AN	ALY	ST	:	RO	BINSO	N											
ASSESSMI	ENT	:															
	CR	IT:	ICAI LIGH	YTI		RED	UNDAN	CY	SCR	EENS	3			CIL			
	1			_		A		В			С			ITE	4		
NASA IOA	[	3	/3 /2R	]	]	P ] P ]	]	P N2	]	[	P NA	]		[	]	*	
COMPARE	[		/N	]	[	]	[	N	3	[	N	]		C	1		
RECOMMEN	IDAT	ric	ons:	(	(If d	iffer	cent :	fro	m N2	ASA)							
	[	3	/2R	]	[	1	[		]	[	P			[ D/DE		ΓE)	
* CIL RE	TEN	ITI	ON	RATI	ONALI	E: (I	fapp	pli	cab]				_	_			
REMARKS:												EQUATI EQUATI		[	]		
RECOMMEN COMPONEN THE IOA THE MANI SET OF N DO NOT M POSITION THE JETT FAILURE.	TS FME PUL ASA ATC	A AT F	FOR I	FAI RETE AL V CO	LURE NTION SO AN MPARE LAYS	OF T LAT ID TH CD. AND	AND 4 CHESE CH CC EREFO THE F	RE NT RE EL	8. LAYS ROL THE AYS	CIR CIR RE ARE	SU SU	GENERA IT WHI LT OF POLE,	TEI CH THE	AS IS E FA	PA 05- ILU	ART 01 -6IC JRES	

ASSESSMEN ASSESSMEN NASA FMEA	) # 1T 1T	DAT ID	re:	1/3 RMS 05-	80/8 5-42 -6IC	8 8 9 –M	RL	-7A								DATA: LINE NEW	[	X		
SUBSYSTEM MDAC ID:				428	S/EP 39 SE,	_														
LEAD ANA	LYS	T:		RO	BINS	ON	ſ													
ASSESSME	NT:																			
							RE	DUND	AN	CY	sc	REE	NS	;				L EM		
	H	IDW	IGH: /FUI	NC L			A			В				С						
NASA IOA								]	[	P	]		[	P	]					*
COMPARE	[		/N	]		[	N	]	(	N	]		[	N	]		[		]	
RECOMMEN	'DA'	ric	ns:		(If	<b>d</b> :	ifi	ferer	nt	fr	om	NAS	A)	)						
	[		/	]		[		]	[		]		[		]	( <i>1</i>		/DE		ETE)
* CIL RE	TEI	NT]	ON	RAT	'ION	AL.	E:	(If	ap	pl	ic	able	≥) II	A NA	DEQ DEQ	UATE UATE	[		]	
REMARKS: UPGRADE MULTIPLE INABILIT GUILLOTI COULD RI CORRESPO 4267, 42 RECOMMENTO ALLOY	IOA	AII TO /JI LT S '	LURE SAF ETTI IN IO I 4289	S CELY SON LOS THE	COUL LA' SS O FOL 1290	D TC ST F LO	CA H EM CR WI 43	THE DEW/V	MOT RMS EHI OA 431	ICI FM L2,	ND E. EA 4	SUI TI S: 4	BS: HI: 42	EQ S 11 AN IN	ONE , 4 D 4 TO	T FA: NAS: 212, 334. ONE	ILU A F 42	RE ME 45	O1	THE

ASSESSM NASA FM	ENI ENI	; L ; 1	DATE:	RN 05	/30/ <b>/S-4</b> 5-6I	88 29 C-	0 MR	L-	·7A							SA DAT ASELIN NE			]	
SUBSYST MDAC ID ITEM:	EM:			RM 4.2	IS/E 290 JSE,	PD	&C													
LEAD AN	ALY	ST	<b>':</b>	RC	BIN	so	N													
ASSESSM	ENT	:																		
		F.	LIGH	$\mathbf{T}$					UNDAN									L EM		
		ΠD	W/FU	IVC			A				В			(	3					
NASA IOA	[	3	/1R /3	]		[	P	]	] [	:	P	]	]	1	•	]	]		]	*
COMPARE	[		/N	]		[	N	]	C		N	]	[	ľ	ī j	1	[		]	
RECOMMEN	IDA'	ΓI	ons:		(If	di	if1	fei	rent	f	rc	m	NASA	)						
	[		/	]		[		]	[			]	[		]	( <i>P</i>	[ DD/	DE	] Le	TE)
* CIL RE	TEI	T	ION 1	RAT:	IONA	LE	E :	(1	[f ap	p.	li	.ca	ble)							
REMARKS:									-	-				A	DE DE	QUATE QUATE	[	, :	] ]	
UPGRADE MULTIPLE INABILIT GUILLOTI COULD RE CORRESPO 4267, 42 RECOMMEN	IOA FA NE/ SUI NDS 68,	JE J	SAFI ETTIS IN I O TH	ELY SON LOSS HE H 42	LAT SYS OF FOLL 290,	TE TE OW 4	I T M RE IN 31	W/G	VEHION 10A 1	CI FN	K AN LE ME	BUI D : As: 43:	RNOUTSUBSETHIS  THIS  421  33, A	EQ EQ L1	AN UE ON D	D COUL NT FAI E NASA 4212, 4334.	D LI LURI FMI	EAI E C EA	) [ )F	ro The
TO ALLOW	CC	MF	ARIS	ON	WIT	H	TH	Ē	NASA	I	203	ST	51L	F	ME	Α.				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4291 05-6IC-M		-12				]		SA DATA: ASELINE NEW		] ]	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4291 RESISTOR		R68									
LEAD ANALYST:	ROBINSON	ī										
ASSESSMENT:												
CRITICAL		RE	DUNDA	NC	Y	SCREE	NS			CIL		
FLIGH HDW/FU		A			В			С				
NASA [ 3 /3 IOA [ 3 /3	] [	N	]	] [	N	]	[	N	]	[	]	*
COMPARE [ /	] [	N	]	[	N	]	[	N	]	[	]	
RECOMMENDATIONS:	(If d	iff	erent	: 1	fro	om NAS	A)	)				
[ /	] [		]	[		]	[		] (A)	[ DD/DE		TE)
* CIL RETENTION	RATIONAL	Е:	(If a	ıpı	<b>p1</b> :	icable			DEQUATE DEQUATE		]	
REMARKS: NO ISSUE. THE N	NASA FMEA	II E M	EM IS	3 ' 4S	TH!	E "RE <i>I</i> ERRONI	EO!	Y '	TO LATCH INDICAT	IND:	[CA	TION THE

IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMENT DATE: 1/25/8 ASSESSMENT ID: RMS-42 NASA FMEA #: 05-610						88 29 C-	2 MR	L-	·12						ASA   BASE:	LINE					
SUBSYST	EM:				4:	MS/E 292 ESIS				34											
LEAD AND	ALY	ST	:		RO	BIN	SO	N													
ASSESSMI	ENT	:																			
	CRITICALITY FLIGHT HDW/FUNC								REDUNDANCY SCREENS								CIL				
								A			E	3			С			ITE	M		
NASA IOA	[	3 3	/	3 3	]		]	N	]	[	N	ſ	]	[	N	]		[	]	*	
COMPARE	[		/		]		[	N	]	[	N	ſ	]	[	N	]		[	3		
RECOMMEN	IDA!	ΓI	ON	s:		(If	di	lf1	feı	rent	fr	.0	m NAS	SA	)						
	[		/		J		[		]	[			]	[		]	(AI	[ DD/DE	] ELE	ТF	Ξ)
* CIL RE	TE	NT:	[0]	N F	TAS	IONA	LE	::	()	[f ap	pl	i									
REMARKS:															IAI	EQUA EQUA	TE	Č			
NO ISSUE CIRCUIT" IOA FMEA PURPOSES 4213 THR 4313 THR	s A , I U 4	DI [0]	DRI A F	ESS REC	T) OM 24	HE I MEND 7 TH	ND S RU	IV CO	IOL III ME	DE AS DUAL BININ 50. 4	CO G '	E) M) Til	RRONE PONEN	TS	JS 3.	INDI FOR	CATI COM	ON".	SO	TH N	Œ

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		RL-12				SA DATA: ASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4293 RESISTOR							
LEAD ANALYST:	ROBINSON							
ASSESSMENT:								
CRITICAL		REDUNDA	NCY	SCREE	NS		CIL	1
FLIGH HDW/FU		A	В		С			_
NASA [ 3 /3 IOA [ 3 /3	] [ ]	N ]	[ N	]	[ N	]	[	] <b>*</b>
COMPARE [ /	] [ ]	N ]	[ N	]	[ N	]	[	]
RECOMMENDATIONS:	(If di	fferent	t fro	om NAS	A)			
[ /	] [	]	[	]	[	] (A	[ ID/DD	] ELETE)
* CIL RETENTION	RATIONALE	(If a	appl:		A.	DEQUATE DEQUATE	-	]
REMARKS: NO ISSUE. THE N CIRCUIT" WITH TH IOA FMEAS ADDRESS	NASA FMEA HE FAILURE SS THE IND	MODE .	AS ": L CO	ERRONE MPONEN	OUS TS.	INDICAT	ION" MPAR	. THE

PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4294 NASA FMEA #: 05-6IC-MRL-12											N	ASA D BASEL	INE	: [ [ X						
SUBSYST	EM:				RI 4:2		PD	&C												
LEAD AND	ALY	SI	<b>:</b> :		RO	DBIN	SO:	N												
ASSESSMI	ENT	<b>:</b>																		
		F	,TI	GH'	T					UNDA	N	CY	SCRE	EN.	s			CIL		
		HD	W/	FU!	NC			A				В			С					
NASA IOA	[ [	3 3	/	'3 '3	]		[	N	]		[	N	]	]	N	]		[	]	*
COMPARE	[		/	•	]		[	N	]		[	N	]	[	N	]		[	]	
RECOMMEN	IDA'	TI	ON	is:		(If	đ:	ifi	fe	rent	f	fro	om NA	SA	)					
	[		/		]		[		]		[		]	[		]	(AE	[ DD/DI	] ELE	TE)
* CIL RE	TE	ΝТ	IO	N I	TAS	IONA	<b>L</b> E	: 2	(	If a	pŗ	li	.cable							
REMARKS:																EQUAT EQUAT		•	-	
NO ISSUE. THE NASA FMEA ITEM IS THE "READY TO LATCH INDICATION CIRCUIT" WITH THE FAILURE MODE AS "ERRONEOUS INDICATION". THE IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.																				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4295 05-6IC-MRL-7	N	ASA DATA: BASELINE   NEW	[ x ]
	RMS/EPD&C 4295 RESISTOR, R12	2		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL FLIGH		NDANCY SCREENS		CIL ITEM
	NC A	В	2	
NASA [ 3 /1R IOA [ 3 /2R	] [ P ]	[ P ] [ F ] [ NA] [ N		[ ] *
COMPARE [ /N	] [ N ]	[ N ] [ N	1 ]	[ ]
RECOMMENDATIONS:	(If differ	ent from NASA)		
[ /	] [ ]	[ ] [	] (AD	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (I	f applicable) IN	ADEQUATE ADEQUATE	
REMARKS: IOA CONCURS WITH IOA SCREENS. SU BURNOUT AND COUL SUBSEQUENT FAILU	JBSEQUENT MULT	TIPLE FAILURES TAILURES TO SAFE	LY LATCH T	THE RMS AND

COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273,

4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH

NASA POST 51L FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-429 05-6IC-	6 MRL-7	NASA DATA BASELINE NEW	: [ x ]	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4296 RESISTO				
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL FLIGH	ITY T	REDUNDAN	CY SCREEN	rs	CIL ITEM
HDW/FU	NC	A	В	С	IIEM
NASA [ 3 /1R IOA [ 3 /2R	] [	P ] [	P ] [ NA] [	P ] NA]	[ ] *
COMPARE [ /N	] [	<b>N</b> ] [	N ] [	N ]	[ ]
RECOMMENDATIONS:	(If di	ifferent :	from NASA	)	
[ /	) [	] [	] [	] (AI	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE	E: (If app	•	ADEQUATE NADEQUATE	[ j
REMARKS: IOA CONCURS WITH IOA SCREENS. SUI BURNOUT AND COULD SUBSEQUENT FAILUI COULD CAUSE LOSS TO THE FOLLOWING 4274, 4295, 4296 COMBINING ALL LIS NASA POST 51L FMI	D LEAD TO RE OF THE OF CREW/ 12 IOA F 4317, 4	MULTIPLE INABILIT GUILLOTI VEHICLE. MEAS: 421	ADE IOA CI FAILURES TY TO SAFI THIS ONI THIS ONI 17, 4218,	RIT TO 3/1R COULD CAUS ELY LATCH T SON SYSTEM E NASA FMEA 4251, 4252	R AND CORRECT E MOTOR THE RMS AND WHICH CORRESPONDS 1, 4273,

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4297 NASA FMEA #: 05-6IC-MRL-11									N	IASA BASE	DATA: LINE NEW	: [ [ X	] : ]		
SUBSYSTE MDAC ID:	M :			RMS	S/EPD	&C									
LEAD ANA	LYS	ST:	:	ROI	BINSC	N									
ASSESSME															
	CR	IT:	ICAL LIGH	ITY T		F	REDUNI	DANCY	SCI	REENS			CII		
	1	HD	W/FU	NC		A		В		(	C				
								[			]		[		*
COMPARE	[		/	]		[	]	[	]	[	]		[	]	
RECOMME	NDA	TI	ons:		(If o	dii	ffere	nt fr	om 1	NASA)					
	[		/	]		[	)	[	]	[	]	(A		DEL.	ETE)
* CIL R	ETE	ΝT	NOI	RAT	IONA	LE	: (If	appl	ica	ble) IN	ADEQ ADEQ	UATE UATE	[	]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REOUIRE	E. TYP 1 F SON RU RU	E WE 1, 42	1, I /MII IOA 234,	RESI D/AF REC 425 AND	STOR T PE OMME 3 TH 4341	S DE: ND:	& EVE STAL S COM	CIRCU IBININ	DII IT G T 5 T	CATIC COMPC HE FO	NENT LLOW	ING I	FOR FOA TH	FME RU	As: 4300

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4298 NASA FMEA #: 05-6IC-MRL-11										NASA D BASEI				
SUBSYST:	EM:		ı	RMS/E	PD&C	:								
LEAD AND	ALY	ST	:	ROBIN	SON									
ASSESSMI	ENT	:												
		F	LIGH'	ITY I NC					ENS		CIL ITEM			
NASA IOA	[	3	/3 /3	]	[	]	[	]	[	]	]		]	*
COMPARE	[		/	]	[	]	[	]	[	]	[		]	
RECOMMEN	IDA'	ric	ons:	(If	dif	feren	t fro	om NA	SA)					
	(		/	]	ſ	]	[	]	[	1	[ (ADD)			TE)
* CIL RE		YT]	ON F	RATION	ALE:	(If a	appli	icable		ADEQUAT	TE [		]	
REMARKS: NO ISSUE DRIVER T SYSTEM 1 COMPARIS 4219 THR 4319 THR REQUIRE	YPE FW ON, U 4	I 23 32	MID/ OA R 4, 4	AFT PE ECOMME 253 TH	RS & EDEST ENDS IRII 4	EVENT PAL CI COMBI	RCUI	OIICAT T COM THE	PON PON FOI	", ANI ENTS. LOWING	FOR IOA	LUD FM	ES EAs	S:

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4299 NASA FMEA #: 05-6IC-MRL-11												NA B	SA ASE	DA' LII N	TA: NE EW	[ ]	X	]				
SUBSYSTE MDAC ID: ITEM:	M:					S/EP 99 SIST																
LEAD ANA	LYS	ST	:		RO	BINS	ОИ															
ASSESSME	NT:	:																				
	CR						I	RE	DUN	ΙDΑ	NCY	<i>i</i> S	CRE	EN	S				CI IT			
	]	r: HDI	M/	FU	I NC		2	A			E	3			С							
NASA IOA	[	3	/	3 3	]		[		]		[			[		]			[			*
COMPARE	[		/	•	]		[		]		[		1	[		]			[		]	
RECOMME	NDA'	ΤI	ON	ıs:		(If	di	ff	ere	ent	<b>. f</b> 1	roı	n NA	ASA	.)							
	[		/	,	]		[		]		[	,	}	[		]		(A	[ DD/	'DF	] ELE	ETE)
* CIL R	ETE	NT	IC	И	RAT	ONZ	ALE	:	(I:	£ a	app:	li	cab:	le) I	Al NAI	DEQ DEQ	LAU LAU	E E	[		]	
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REQUIRE	E. TYP 1 F SON RU RU	E WD , 42	1, /N I( 34) 32:	, R MIC OA 4, 2 A	ESI /AF REC 425 ND	STO T P COMM 33 T 434	RS EDE END	&  S]  S	EVI FAL COI	EN' C: MB:	r I IRC INI 42	ND UI' NG 75	T C TH	ATI OMF E F	ON ON OL	ENT LOW 78.	S. INC	F 3 I 297	OR OA TI	FI IRI	ME U	As: 4300

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/8 RMS-43 05-6IC	8 00 -MRL-11			1	NASA DA BASELI N		
	RMS/EP							
LEAD ANALYST:	ROBINS	ON						
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	T	REDUNI A	D <b>AN</b> CY B		ENS C		CIL ITE	
		[ ]					[	] *
COMPARE [ /	]	[ ]	[	]	[	]	[	]
RECOMMENDATIONS:	(If o	differen	t fro	om NAS	SA)			
[ /	] [	[ ]	ĺ	]	[		[ (ADD/Di	
* CIL RETENTION I	RATIONAI	LE: (If	appli	icable	A	DEQUATE DEQUATE	] 2 [	]
NO ISSUE. THE NA DRIVER TYPE 1, RI SYSTEM 1 FWD/MID/ COMPARISON, IOA I 4219 THRU 4234, 4 4319 THRU 4322 AN	SISTORS AFT PER RECOMMEN 253 THR ID 4341	S & EVEN DESTAL C NDS COMB RU 4256.	T IND IRCUI INING 4275	OIICAT T COM THE	ION IPON FOL	", AND ENTS. LOWING	INCLUI FOR IOA FN	DES MEAs:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4301 05-6IC-M	IRL-4		NASA DATA: BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4301 HYBRID F		59			
LEAD ANALYST:	ROBINSON	1				
ASSESSMENT:						
CRITICAL FLIGH		REDUNDA	NCY SCREEN	is	CIL ITEM	
HDW/FU	NC	A	В	С		
NASA [ 3 /1R IOA [ 3 /2R						
COMPARE [ /N	] [	N ]	[ N ]	[и]	[	]
RECOMMENDATIONS:	(If d	ifferent	from NAS	A)		
[ /	] [	3	[ ]	[ ] (A)	[ DD/DE	] LETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	) ADEQUATE INADEQUATE	Ĺ	j
DEMA DVC •				INADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH	THE POS	T 51L CI	RIT OF 3/1	R. IOA SCR	EENS ENDS	SHOULD
BE 1-P-P. TO CO COMBINING THE FO	LLOWING	24 IOA 1	FMEAs: 42	01, 4203, 4	205,	4207,

4235, 4237, 4239, 4241, 4257, 4259, 4261, 4263, 4279, 4281, 4283, 4285, 4301, 4303, 4305, 4307, 4323, 4325, 4327, AND 4329. THE IOA FMEAS ARE FOR 12 PORT AND 12 STARBOARD HYBRID RELAYS USED BY

SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH

PORT AND STARBOARD ARMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-430 05-6IC-	2 MRL-5		NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSISTEM:	4302	&C RELAY, K									
LEAD ANALYST:	ROBINSO	N									
ASSESSMENT:											
CRITICAL: FLIGHT	CIL										
HDW/FUI	NC	A	В	С							
NASA [ 3 /1R IOA [ 3 /2R	] [	P ]	[	] <b>*</b>							
COMPARE [ /N	] [	и ј	ן א ן	и ј	[	]					
RECOMMENDATIONS:	(If di	ifferent	from NASA	.)							
[ /	] [	]	[ ] [		[ DD/DI	] ELETE)					
* CIL RETENTION F	RATIONALE	E: (If a	pplicable)								
			•	ADEQUATE NADEQUATE	<u>[</u>	j					
REMARKS: NO ISSUE.											
IOA CONCURS WITH THE POST 51L CRIT OF 3/1R. IOA SCREENS SHOULD BE 1 - P - P. IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS TO COMPARE WITH THE NASA FMEA. COMBINE THE FOLLOWING 12 IOA FMEAS: 4202, 4204, 4236, 4238, 4258, 4260, 4280, 4282, 4302, 4304, THE 12 IOA FMEAS ARE FOR 6 INDIVIDUAL PORT AND 6 INDIVIDUAL											

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4303 05-6IC-MI	RL-4		NASA DATA: BASELINE NEW		]
SUBSYSTEM:	RMS/EPD&0					
LEAD ANALYST:	ROBINSON			•		
ASSESSMENT:						
<del>_</del>	ITY :				CIL	
HDW/FU	IT INC	A	В			
NASA [ 3 /11 IOA [ 3 /21	R] [	P ] [	P ] [ NA] [	P ] NA]	[	] <b>*</b>
COMPARE [ /N					[	]
RECOMMENDATIONS	: (If di	fferent f	rom NASA	)		
( /	] [	] [	] [	] (Al	[ DD/DI	] LETE)
* CIL RETENTION	RATIONALE	E: (If app	olicable) I	ADEQUATE NADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WIT BE 1-P-P. TO C COMBINING THE F 4235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE F SYSTEM 1 AND SY PORT AND STARBO	OMPARE WIT OLLOWING 2 9, 4241, 4 3, 4305, 4 OR 12 PORT STEM 2, FV	TH THE NAM 24 IOA FMI 4257, 4259 4307, 4329	EAS: 420 9, 4261, 3, 4325, STARBOARD	1, 4203, 4 4263, 4279 4327, AND HYBRID RE	205, , 42; 4329 LAYS	4207, 81, 4283 . THE USED BY

ASSESSM ASSESSM NASA FM	ENT ENT EA	' [ ' ]	DATE:	1/ RM 05	'30/8 IS-43 5-6IC	88 804 2-M	ıR	L <b>-</b> 5							N	IASA BASE	LINE	: [ [ X	] [ ]		
SUBSYST MDAC ID ITEM:	ĽM:			RM 43	IS/EF	D&	С														
LEAD AN	ALY	ST	?:	RO	BINS	ON							,								
ASSESSM	ENT	:																			
		F	ICAL	T				EDUI	NDA	N	CY	S	CRE	EN	s			CIL			
		HD	W/FU	NC			A				В				C						
NASA IOA	[ [	3	/1R /2R	]		[ ]	P	]		[ [	P NZ	) }		[	P N	] A]		[	]	*	
COMPARE	[		/N	]		[ ]	N	]		[	N	]		[	N	]		[	]		
RECOMMEN	IDA'	ΓI	ons:		(If d	di:	£f	ere	ent	1	fro	m	NAS	SA)	)						
	[		/	]		[		]		[		]		[		]	(AI	[ D/D/			)
* CIL RE	TE	T.	ION F	TAS	CONA	LE :	:	(If	a	pŗ	li	.ca	ble	<b>)</b>							
REMARKS:														IN	AI IAI	DEQUA DEQUA	TE TE	[	]		
IOA CONC BE 1 - P COMPARE 4202, 42 THE 12 I	WIT 04, OA	H 4 FM	THE 1236, 1EAs	NAS 42 ARE	SA FM 38, FOR	IEN IEA 42	5	S C CO 8, IND	OMI MBI 426 IVI	2 D 2 O 2 D	NI E , UA	NG TH	THE F	E OL	FC LC	DLLOW DWING	ING 12	IOA IOA	FM FM	EAs EAs	

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4305 05-6IC-MRL-4		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C			
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL FLIGH	ITY REDU			CIL ITEM
HDW/FU	NC A	В		
NASA [ 3 /1F IOA [ 3 /2F	[ P ] [ ]	[ P ] [ NA]	[ P ] [ NA]	[ ] *
COMPARE [ /N	] [N]	[и]	[и]	[ ]
RECOMMENDATIONS:	(If differ	ent from NAS	A)	
[ /	] [ ]	[ ]		[ ] .DD/DELETE)
* CIL RETENTION	RATIONALE: (	If applicable	ADEQUATE INADEQUATE	[ ]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO COMBINING THE F 4235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE F SYSTEM 1 AND SY PORT AND STARBO	OMPARE WITH 11 OLLOWING 24 IO 9, 4241, 4257 3, 4305, 4307 OR 12 PORT AN STEM 2, FWD,	OA FMEAS: 42 , 4259, 4261, , 4323, 4325,	201, 4203, 4 , 4263, 4279 , 4327, AND	1205, 4207, 9, 4281, 4283 4329. THE ELAYS USED BY

ASSESSMENT ASSESSMENT NASA FMEA	DATE: ID: #:	2/16/88 RMS-430 05-6IC-	3 06 -MR	L-6					ASA DATA BASELIN NEV	E [		]		
SUBSYSTEM: MDAC ID: ITEM:			O&C											
LEAD ANALY	ST:	ROBINSO	N											
ASSESSMENT	:													
CR	ITICALI FLIGHT		RE	EDUNDA	NCY	SCRE	ENS	5		_	IL			
	HDW/FUN		A		_			С		1.	ΓEI	4		
NASA [ IOA [	2 /1R 3 /2R	] [	P	]	[ F	] <b>A</b> ]	[	P Na	] A]	[ [	x	]	*	
COMPARE [	N /N	] [	N	]	[ N	J	[	N	]	[	N	]		
RECOMMENDAT	rions:	(If d	iff	erent	fr	om NA	SA)							
[	/	] [		]	[	]	[		] (A	[ DD/	'DE	] :LF	TE	)
* CIL RETEN	TION R	ATIONAL	E:	(If a	pl	cable								
REMARKS: NO ISSUE.							IN	AC AC	EQUATE EQUATE	[		]		
IOA CONCURS BE 1 - P - TO COMPARE FMEAS: 420 THE 12 IOA STARBOARD	WITH TO WITH T	HE NASA 8, 4240, ARE FOR	FM:	EA. ( 242, 4 INDIVI	OME 262	SINE T	CHE CHE 54,	F	OLLOWING	G I	OA I	F OA	MEZ	ld LD

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4307 05-6IC-1	7 MRL-4		NASA DATA: BASELINE NEW	[ x ]	]
SUBSYSTEM:	RMS/EPD	&C				
LEAD ANALYST:	ROBINSO	N				
ASSESSMENT:						
CRITICA FLIG		REDUNDA	NCY SCREE	NS	CIL ITEM	
	INC	A	В	С		
NASA [ 3 /1 IOA [ 3 /2	R ] [	P ]	[ P ] [ NA]	[ P ] [ NA]	[	] <b>*</b>
COMPARE [ /N	] [	и ]	[ N ]	[ N ]	[	]
RECOMMENDATIONS	: (If d	lifferent	from NAS	iA)		
			[ ]	[ ]	[ DD/DE	] :LETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	ADEQUATE INADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO COMBINING THE IN 4235, 4237, 423 4285, 4301, 430 IOA FMEAS ARE IN SYSTEM 1 AND SY	OMPARE WI OLLOWING 9, 4241, 3, 4305,	TH THE F 24 IOA I 4257, 42 4307, 43	MASA FMEA, FMEAs: 42 259, 4261, 323, 4325, 5 STARROAL	, 10A RECOMM 201, 4203, 4 , 4263, 4279 , 4327, AND RD HYBRID RE	205, , 428 4329 LAYS	4207, 31, 4283, THE USED BY

PORT AND STARBOARD ARMS.

ASSESSM ASSESSM NASA FM	ENT ENT EA	' [ ' I #:	ATE:	2, Ri 0.	/16/ MS-4 5-61	88 30 C-	8 MR	L-6						ASA DA BASELI N		[		]		
SUBSYST MDAC ID ITEM:	EM:			4:	MS/E 308 YBRI			LAY,	<b>K</b> 7	4										
LEAD AN	ALY	ST	:	R	DBIN	so	N													
ASSESSM	ENT	:																		
FLIGHT																ΙL				
							A			В			С			I'	ΓEN	1		
NASA IOA	[	2	/1R /2R	]		]	P	]	[	F N	] <b>A</b> ]	[	P N	] <b>A</b> ]		[	X	]	*	
COMPARE	[	N	/N	]		[	N	]	[	N	]	[	N	]		[	N	]		
RECOMMEN	IDA!	TI(	ons:		(If	di	Ĺfſ	ere	nt :	fro	om 1	NASA	)							
	[		/	]		[		]	(		]	ξ		J	(AC			] :LE		)
* CIL RE	ETEI	T.	ION 1	RAT	'ION	ALE	:	(If	apı	pli	.cab				_	_				
REMARKS:												IN	AL JAI	EQUAT!	E E	[		]		
IOA CONC BE 1 - F TO COMPA FMEAS: THE 12 I STARBOAR	RE 420	P. W) ( 06 FN	TH 7 420 EAs	PA THE D8, AR	NAS 424 E FC	OMM SA SO, OR	EN FM 4	DS ( EA. 242, INDI	COMI CO 42 VII	BIN DME 262 DUA	ING INE , 4 L P	THE THE 264, ORT	: F : F 4	OLLOW:	ING ING 128	6 6	OA I	F OA	ME?	D VS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4309	NASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4309 RELAY, K78	
LEAD ANALYST:	ROBINSON	
ASSESSMENT:		
CRITICAL	ITY REDUNDANCY SCREEN	S CIL ITEM
FLIGH HDW/FU	IT INC A B	С
NASA [ 2 /1F IOA [ 3 /2F	R] [P] [P] [ R] [NA] [	P ] [ X ] * NA]
		N ] [ N ]
RECOMMENDATIONS:	: (If different from NASA	s)
		P ] [ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If applicable)	ADEQUATE [ ] [NADEQUATE [ ]
THE IOA FMEA FO THE MANIPULATOR SET OF NASA FME DO NOT MATCH WH	MMEND UPGRADING IOA FMEA TO RETAILURE OF THESE RELAYS OF RETENTION LATCH CONTROL COMPARED. THE RELAYS AT THE RELAYS AT THE RELAYS AT THE RELAYS AND RELAYS AND RELAYS AND RELAYS AND LOTINE CIRCUITS. IOA CONTROL OF THE RELAYS AND APPEAR IN BOTH RELAYS AN	IRCUIT WHICH IS 05-61 RESULT OF THE FAILURES RE 4 POLE, 2 THE THE LATCH CONTROL AND

ASSESSM ASSESSM NASA FM	ENT ENT EA	? [ ? ] #:	DATE: [D:	2/ RM 05	14/88 S-431 -6ID-	0 2130-	-1			NAS. BA:	A DAT SELIN NE		<b>x</b> j	
SUBSYST MDAC ID ITEM:	EM:			RM 43	S/EPD	&C							-	
LEAD AND	ALY	ST	! <b>:</b>	RO	BINSO	V								
ASSESSMI	ENT	•												
	CR	TI T	ICAL LIGH	ITY		REDU	NDAN	CY	s	CREENS		CI		
						A		В		С		ITI	EM	
NASA IOA	[	3 3	/3 /2R	]	[	P ] P ]	[	P N	] <b>A</b> ]	[ P ] [ NA]		[	]	*
COMPARE	[		/N	]	[	3	[	N	]	[ N ]		[	]	
RECOMMEN	DA'	ΓΙC	ons:	(	[If di	ffer	ent f	iro	om	NASA)				
	[	3	/2R	]	]	]	[		]	[ P ]		[ DD/D		ΓE)
* CIL RE	TEN	T]	ON F	ITAS	ONALE	: (I1	app	li	.ca					
REMARKS:	D 1	·Da								INADEQU		Ī	_	
THE IOA THE MANISET OF NO DO NOT MAPOSITION	FME PUL ASA ATC	A AT F H	FOR OR R MEAS WHEN	FAI ETE AL COI	LURE ( NTION SO ANI MPAREI	DF TH LATC D THE	ESE H CO REFO HE R	RE NT RE EL	LA: ROI TI AYS	/2R. RECOM YS WAS GEN L CIRCUIT HE RESULT S ARE 4 PO BOTH THE CONCURS W	WHICH OF TH	ED A H IS HE F	S PA 05- AILU	ART OI -6I JRES

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4311 05-6IC-M	RL-7A				SA DATA: ASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4311 FUSE, F5							
LEAD ANALYST:	ROBINSON	ī						
ASSESSMENT:								
ET TCI	JTY m		ИСХ	SCREE			CIL ITEM	
HDW/FC	INC		В		С			
NASA [ 3 /11 IOA [ 3 /3	? ] [ ] [	P ]	[ P	]	[ P	]	[	
COMPARE [ /N		и ј					[	]
RECOMMENDATIONS	: (If d	ifferent	fre	SAN mc	SA)			
	] [					] (A	DD/D	] ELETE)
* CIL RETENTION	RATIONAL	E: (If	appl	icable	e) INA	DEQUATE DEQUATE	[	]
REMARKS:  UPGRADE IOA CRI MULTIPLE FAILUE INABILITY TO SA GUILLOTINE/JETT COULD RESULT IN CORRESPONDS TO 4267, 4268, 428 RECOMMENDS COMPAN	ES COULD FELY LATO ISON SYST LOSS OF THE FOLLO	CAUSE IN THE REPORT OF THE PROPERTY OF THE PRO	MS A HICL A FM	ND SULLE. THEAS: 4333	BSEQ HIS 4211 , AN	ONE NASA , 4212, ID 4334. ITO ONE	LURE A FME 4245	OF THE

ASSESSI ASSESSI NASA FI	IEN'	<b>c</b> ]	[D:	1 R	/30/ MS-4 5-6I	88 31 C-	2 MR	≀L-	7 <b>A</b>						N		A DA SELI N	NE			]	
SUBSYST MDAC II ITEM:	EM:	:		RI 4:	MS/E 312 USE,	PD	&C												-		•	
LEAD AN	ALY	'S'I	? <b>:</b>	R	DBIN	SO:	N															
ASSESSM	ENT	<b>':</b>																				
	CR	IT F	'ICAL 'LIGH	ITY T			R	EDU	JND	ΑN	CY	S	CRE	EN	S				CI	_		
		HD	W/FU	NC			A				В				С				IT	ΞM		
NASA IOA	[	3	/1R /3	]		[	P	]		[	P	]		[	P	]			[	]	;	*
COMPARE	[		/N	]		[	N	J		[	N	]		[	N	]			[	]		
RECOMME	NDA	ΓΙ	ons:		(If	đi	.ff	er	ent	: 1	rc	m	NA	SA)								
			/													]	(	(AC	[ D/D	EL.	ET	E)
* CIL RI	ETE	(TV	CON I	RAT:	IONA	LE	:	(I	fa	pp	li	ca	ble									
REMARKS:	!													IN	AD	EQ	UATE UATE	:				
UPGRADE MULTIPLE INABILIT GUILLOTI COULD RE CORRESPO 4267, 42 RECOMMEN	Y T NE/ SUL NDS 68, DS	JE T T 4	SAFE TTIS IN I O TH 289,	LY ON OSS E H	LAT SYS OF FOLL 290,	CH TEI CI OW:	T M REING	HE W/Y G :	MO RM VEH IOA 43	IC F	AN LE ME	D :	TH	IIS 21	QU O 1,	ND ENT NE 42 43	COU F FA NAS 212,	LD IL A	LE. URE	AD OI A , 4	T	O THE
TO ALLOW	CO	MP	ARIS	ON	WITI	H :	[H	E N	IAS	A	PO	ST	51	L	FM	EA.	ME					

ASSESSMEN ASSESSMEN NASA FMEA	T T #	DA' ID	re:	1/25 RMS- 05-6	5/88 -431: 5IC-1	3 MRI	<b>-</b> 12							DATA LINE NEW	[	x	]	
SUBSYSTEM MDAC ID:				RMS/ 4313 RES			R66	1										
LEAD ANAI	_YS	T:		ROB:	INSO	N												
ASSESSMEN	1T:																	
C	CRI	[T]	CAI LIGH	YTI		R	EDUN	IDAN	CY	SC	REEN	s				IL TEN		
	I	r I VDF	J/FU	INC		A			В			С						
NASA IOA						N	]	]	N	]	[	N	]		[		]	*
COMPARE					[							N			[		]	
RECOMMEN	DA'	TI(	эис	: (	If d	lif	fer	ent	fr	om	NASZ	A)						
	[		/	]	(	-	]	(	•	]	,	[	]	(2			] ELE	TE)
* CIL RE	TE:	NT	ION	RATI	[ONA]	LE:	(I	f ap	pl	ica.			DEÇ DEÇ	UATE 2TAU	[ [		]	
REMARKS: NO ISSUE CIRCUIT' IOA FMEA PURPOSES 4213 THE 4313 THE	· W As S,	AD IO	H T DRE A R	HE FA	AILU HE I MEND 7 TH	RE NDI S ( RU	MOD EVIE COME 475	DE AS DUAL BINIS BO,	CC NG 426	MPO THI	NENC F FO	TS.	I ITW	FOR C	OMI	PAF	ISC As:	) :

ASSESSMI ASSESSMI NASA FMI	ENI ENI EA	; [ ; ]	)A [D	TE	: 1/ RN 05	/25/ IS-4 5-6I	88 31 C-	.4 ·MR	L-	12						N			LIN	A: E [ W [			
SUBSYSTI MDAC ID: ITEM:	EM:				RM 43	S/E 14 SIS	PD	&C	!														
LEAD ANA	LY	ST	<b>':</b>		RO	BIN	so	N															
ASSESSME	NT	:																					
		F.	L.	rer	JTY T					JND	AN	CY	s	CREI	EN	s					IL PEM	ŗ	
		HD	W/	/FU	NC			A				В				С					. Lift		
NASA IOA	[	3	/	/3 /3	]		[	N	]		]	N	]		[	N	]			[		]	*
COMPARE				′												N				[		]	
RECOMMEN	DA'	ric	ΟN	is:	ı	(If	đi	iff	er	ent	: 1	fro	m	NAS	A)	I							
					]												]			[ DD/			ľE)
* CIL RET	ren	ΙΤΙ	:0	N ]	RATI	ONA	LE	:	(I	f a	pp	li	ca	ble	)								
REMARKS:																				]		i	
NO ISSUE. CIRCUIT" IOA FMEAS PURPOSES, 4213 THRU 4313 THRU	A I I 4	DD OA 21	R:	ESS REC	TH COMM	E II END:	ND S RII	IV CO 4	IDI MB:	E A JAL INI	S C NG	OM T	RR( PO	ONE NEN'	OU TS	s :	INI F	DIC OR	COL	'NOI LAGN	". RIS	r no	THE I

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4315 05-6IC-M	RL-12				SA DATA: ASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4315 RESISTOR							
LEAD ANALYST:	ROBINSON	Į						
ASSESSMENT:								
CRITICAL	YTI	REDUNDA	ANCY	SCREEN	S		CIL ITEM	
FLIGH HDW/FU	IT INC	A	В		С			
NASA [ 3 /3 IOA [ 3 /3			[ N	] [	И	]	[	] <b>*</b>
COMPARE [ /		N ]					[	]
RECOMMENDATIONS	: (If d	ifferen	t fro	om NASA	.)			
[ /	] . [	]	[	] [			[ DD/D	] ELETE)
* CIL RETENTION	RATIONAL	E: (If	appl:	icable)	A NA	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE. THE CIRCUIT" WITH T IOA FMEAS ADDRE PURPOSES, IOA R 4213 THRU 4216, 4313 THRU 4316,	HE FAILUR SS THE IN ECOMMENDS 4247 THE	RE MODE IDIVIDUA S COMBIN	AS ". L CO IING ' 426	MPONENT THE FOR	rs.	FOR CO	MPAR FME	ISON As:

ASSESSME ASSESSME NASA FME SUBSYSTE MDAC ID: ITEM:	ent Ea Em:	; #:	D:	•	RM 05 RM 43 RE	S-4 -6I S/E 16 SIS	31 C- PD TO	.6 MR &C							ì			LINI	A: E [ V [ ]	, ] x ]	
ASSESSME	:NT	:																			
		F.	LI	GH'	r					JND	AN	CY B	sc	REEN	s c				CII		
NASA IOA	[	3 3	/	3 3	]		[	N	]		]	N	]	]	N	]			[	]	*
COMPARE	ĺ		/		]		[	N	]		[	N	]	[	N	]			[	]	
RECOMMEN	DAT	ric	)N	s:	(	(If	di	lf1	er	ent	: 1	rc	m l	NASA	)						
	[	•	/		]		[		]		[		]	ί		J		(A)	[ DD/D	] ELE	TE)
* CIL RET	CEN	ITI	:01	1 R	LTA	ONA	LE	:	(I	f a	pp	li	cal	ole)	2.7	\E-0	773 A		_		
REMARKS:															IAV	ŒQ	<b>LAU</b>	re re	•	-	
NO ISSUE. CIRCUIT" IOA FMEAS PURPOSES, 4213 THRU 4313 THRU	A I J 4	DD OA	RE F	SS EC 4	TH OMM 247	E I END	RE ND S RU	IV CO	IDI MB:	L A JAL INI	S C NG	OM T	RKC PON	IENTS	is	IN F	DIC OR	CON	ON" IPAR	[SOI	THE N

NASA DATA:

ASSESSMEN ASSESSMEN NASA FMEA			2010	4217	L-7					DATA: ELINE NEW			
SUBSYSTEM MDAC ID: ITEM:			RMS/ 4317	EPD&C	<b>!</b>								
LEAD ANAL	YST:	:	ROBI	NSON									
ASSESSMEN	T:												
c				F	REDUN	DANC	Y SCR	EENS	<b>;</b>		CIL		
		LIGH' V/FU		I	<b>Y</b>		В		С				
NASA IOA	[ 3	/1R /2R	]	[ I	? ]	[	P] NA]	[ [	P ] NA]		[	]	*
COMPARE	(	/N	]	[ ]	1]	[	<b>n</b> ]	[	N ]		[	]	
RECOMMEN	DATIO	ons:	(1	f di:	ffere	ent f	rom N	IASA)	)				
	[	/	]	ί	]	[	. 1	[	]	(Al		) DELE	ETE)
* CIL RE	rent:	ION	RATIO	ONALE	: (I1	f app	olicak		ADEQ NADEQ	UATE UATE	[	]	
REMARKS: IOA CONCI IOA SCRE BURNOUT	T110	CTI	DOTA	י חואיםוי	MULT: INAI	IPLE BILIT	FAILU TO YI	DA CI JRES SAFI	RIT T COUL ELY L	O 3/1	R AI SE I THE	ND ( MOT( RMS	JR

NASA POST 51L FMEA.

SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH

TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH

COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS

ASSESSM ASSESSM NASA FM	ENT DA ENT ID EA #:	TE:	1/30/8 RMS-4: 05-610	88 318 C-1	B MR	L-7							DATA: LINE NEW	[	]	
SUBSYST	EM:	:	RMS/EI 4318 RESIST	PD8	ğ.C											
LEAD AN	ALYST:	1	ROBINS	108	1											
ASSESSMI	ENT:															
	CRITIC FL:	CALI: IGHT	ΓY		RI	EDUNDA	ANG	CY	SCRE	ENS	S			CIL		
	HDW,	/FUN	C		A			В			С					
	[ 3 ,										P NA	]		[	]	*
COMPARE	[ /	/N ]	]	[	N	]	[	N	]	[	N	]		[	]	
RECOMMEN	OLTAGN	1S:	(If	di	ff	erent	: 1	fro	m NA	SA)	ļ					
	[ /	′ ]	l	[		]	[		3	[		]		[ D/DI		TE)
* CIL RE		ON RA	ATIONA	LE.	:	(If a	pp	)li	.cabl		AD IAD	EQUA EQUA	TE TE	[	]	
IOA CONC IOA SCRE BURNOUT SUBSEQUE COULD CA TO THE F 4274, 42 COMBININ	CURS WI CENS. AND CO CNT FAI CUSE LO COLLOWI 195, 42	DULD LURE SS O NG 1 96, LIST	LEAD OF TO F CRE 2 IOA 4317, ED IO	TO HE W/ F: 4	MU G VE ME	LTIPI NABII UILLO HICLE As: 4	E II II 21	FA Y NE T	TO SA /JETT HIS ( 4218	CR ES AFE FIS ONE	CO LY ON 42	TO ULD LAT SYS ASA 51,	3/1R CAUS CH T TEM FMEA 4252	ANI E MO HE F WHIC COF	O C OTO MS H RE	R AND SPONDS

NASA POST 51L FMEA.

ASSESSMEN ASSESSMEN NASA FMEA	T T #	DA ID :	TE:	1/2: RMS 05-	5/88 -4319 6IC-MRI	L-11					DATA: LINE NEW	[	]	
SUBSYSTEM MDAC ID:	<b>:</b>			RMS 431	/EPD&C									
LEAD ANAI	YS	T:	;	ROB	INSON									
ASSESSMEN														
(	CRI	T]	CAL	YTI	R	EDUN	DANCY	SCF	REENS			CIL		
		1DV	-	NC	A		В		C					
NASA IOA	[	3	/3 /3	]	[	]	[	]	[	]		[	]	*
COMPARE	[		/	1	[	]	[	]	ſ	]		[	]	
RECOMMEN	DA'	TI	ons:		(If dif	fere	ent fr	om 1	NASA)					
	ι		/	]	ſ	)	[	]	[	]	(A	[ .DD/I	) ELE	
* CIL RE	TE	NT	ION	RAT	IONALE:	(I	f appl	ica	ble) IN	ADEQI ADEQI	UATE UATE	[	]	
REMARKS: NO ISSUE DRIVER T SYSTEM I COMPARIS 4219 THE 4319 THE REQUIRE	E. TYP L F SON RU RU	PE FWE 1, 42	1, /MI IOA 234, 322	RESI D/AF REC 425 AND	STORS (COMMENDS) THRU 4341 T	STAL S CO	CIRCUMBININ	JIT IG T	COMPO THE FO	NENT	S. H ING 1	FOR EOA 7 TH	FME.	As: 4300

ASSESSM ASSESSM NASA FM	ESSMENT DATE: 1/25/88 ESSMENT ID: RMS-4320 A FMEA #: 05-6IC-MRL-11											NASA BASE	LINE			
SUBSYST MDAC ID ITEM:	EM:				RI 4:	MS/E 320	PD&	C , R64								
LEAD AN	ALY	รา	C:		R	BIN	SON									
ASSESSM	ENT	:														
	CR	II. F	'I(	CAI	LITY IT	?	F	REDUN	IDANC:	Y SCI	REEN	3		CII		
							A		]	В		С		ITE	EM	
NASA IOA	[	3	/	/3 /3	]		[	]	[	]	[	]		[	]	*
COMPARE	[		/	′	]		[	]	[.	]	[	]		[	]	
RECOMMEN	IDA!	ΓI	ON	is:		(If	dif	fere	nt fr	om N	IASA)					
	[		/	,	]		[	]	[	]	[	]	(AE	[ DD/D		TE)
* CIL RE		VT:	IO	N :	RAT	IONA	ALE:	(If	appl	icab		ADEQU <i>A</i> ADEQU <i>A</i>			]	
REMARKS: NO ISSUE DRIVER T SYSTEM 1 COMPARIS 4219 THR	YPE FW	D/	/M [O.	ID,	/AF:	PE DMME	DEST	EVEI COMI	NT IN CIRCU	DIIC IT C	ATIO ATIO OMPO	N CIRC N", AN NENTS.	UIT D IN FO	- H CLUI	DES	
4219 THR 4319 THR REQUIRE	U 4	32	22	, Al	125. ND 4	341	THE	1 / 5 6	11.77	c mrr	73 T 4	~~~ .				

REQUIRE ASSESSMENT.

ASSESSME ASSESSME VASA FME	SSMENT DATE: 1/25/88 SSMENT ID: RMS-4321 FMEA #: 05-6IC-MRL-11 SYSTEM: RMS/EPD&C												ì	NASA DA BASELI N	ATA: [NE NEW	[	]		
	EM:	:				5/EP	D&C												
LEAD ANA	AL	YS	T:		ROI	BINS	ON												
ASSESSMI																			
	CI		TOT	TOI	LITY HT				IDA	NCY	SC	REE				CIL			
		H	ĮD۷	/FU	JNC						3			С					
NASA IOA		]	3	/3 /3	]		[ [	]		[	]		] [	]		[	]	*	
COMPARE		[		/	]		[	]		[				]		(	]		
RECOMME	ND	ΑΊ	CI	ONS	:	(If	dif	fer	ent	. f:	rom	NAS	A)						
		[		/	]		[	]		(	]		[	]	(A	] I/dd	) DEL	ETE	)
* CIL R	RET	Έl	T	ION	RAT	ION.	ALE:	(I	fā	app	lic	able	≥) Il	ADEQU <i>I</i> NADEQU <i>I</i>	ATE ATE	[	]		
REMARKS NO ISSU DRIVER SYSTEM COMPARI 4219 TH 4319 TH REQUIRE	JE. TY 1 ISC HRU HRU	IP F ON J J	E WD , 42	1, /MI IOA 234, 322	RESI D/AI A REG 425 AND	STO FT P COMM 53 T 434	EDES ENDS	TAL	C MB	IRC INI	UIT	COL	MP(	ONENTS	. F	OR OA TH	FME RU	As:	00,

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4322 NASA FMEA #: 05-6IC-MRL-11										ELINE	[		
ı:			RM 43	S/EPD&C	!							-	
LYS	ST	:	RO	BINSON									
T:	;												
	F	LIGH	T									_	
]	3 3	/3 /3	]	[	]	]	]	[	]		[	]	*
[		/	]	[	J	[	]	[	]		[	]	
ΑТ	IC	ons:	(	(If dif	fer	ent f	rom N	ASA)					
									]	(AD			
EN'	ΓI	ON	RATI	ONALE:	(II	f app	licab						
											-	•	
FWI 1, 42	)/: I: 23:	MID, OA 1 4, 4	AFT RECO 1253 ID 4	PEDEST	AL COM	CIRCU BININ	IDIICA VIT CO IG THE	ATION OMPON E FOL	", AI ENTS LOWII	ND IN FO NG IO	CLU R A F	DES MEA	s:
	NT : YS : IT : I	T I I I I I I I I I I I I I I I I I I I	THE NATIONS:  THE NATIONS:  THE NATIONS:  THE NATIONS:  ATIONS:  ATIONS:  4234, 44322 AN	TID: RM A #: 05 A: RM A3 RE LYST: RO TI: RITICALITY FLIGHT HDW/FUNC [ 3 /3 ] [ 3 /3 ] [ / ] ATIONS: ( ATIO	A #: 05-61C-ME A #: 05-61C-ME A: RMS/EPD&C 4322 RESISTOR,  LYST: ROBINSON BT:  CRITICALITY R FLIGHT HDW/FUNC A  [ 3 /3 ] [ [ 3 /3 ] [ [ / ] [  ATIONS: (If diff)  [ / ] [  ENTION RATIONALE:  THE NASA FMEA IT PE 1, RESISTORS & FWD/MID/AFT PEDEST  I, IOA RECOMMENDS  4234 4253 THRII 4	A #: 05-61C-MRL-1 A #: 05-61C-MRL-1 A: RMS/EPD&C 4322 RESISTOR, R6 CYST: ROBINSON BT: CRITICALITY REDU FLIGHT HDW/FUNC A  [ 3 /3 ] [ ] [ 3 /3 ] [ ] [ 3 /3 ] [ ]  ATIONS: (If difference of the company o	A #: 05-6IC-MRL-11  A: RMS/EPD&C 4322 RESISTOR, R65  CYST: ROBINSON  T:  CRITICALITY REDUNDANC FLIGHT HDW/FUNC A  [ 3 /3 ] [ ] [ [ 3 /3 ] [ ] [ [ / ] [ ] [  ATIONS: (If different f:  [ / ] [ ] [  ENTION RATIONALE: (If app)  THE NASA FMEA ITEM IS "IPE 1, RESISTORS & EVENT IN FWD/MID/AFT PEDESTAL CIRCUIT, IOA RECOMMENDS COMBININ 4234, 4253 THRU 4256, 427 4322 AND 4341 THRU 4344	A #: 05-6IC-MRL-11  A: RMS/EPD&C 4322 RESISTOR, R65  LYST: ROBINSON  AT:  RITICALITY REDUNDANCY SCF FLIGHT HDW/FUNC A B  [3/3] [] [] [3/3] [] []  [4] []  ATIONS: (If different from N  [4] [] []  ENTION RATIONALE: (If applicable of the companion	A #: 05-61C-MRL-11  A: RMS/EPD&C 4322 RESISTOR, R65  LYST: ROBINSON  TT:  RITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B  [ 3 /3 ] [ ] [ ] [ [ ] [ ] [ ] [  ATIONS: (If different from NASA)  [ / ] [ ] [ ] [  ENTION RATIONALE: (If applicable)  THE NASA FMEA ITEM IS "INDICATION FWD/MID/AFT PEDESTAL CIRCUIT COMPON IN, IOA RECOMMENDS COMBINING THE FOL 4234, 4253 THRU 4256, 4275 THRU 42 4322 AND 4341 THRU 4344 FMFAC WILL  ATHER WASA FMEA ITEM 4256, 4275 THRU 42 4322 AND 4341 THRU 4344 FMFAC WILL  THE NASA FMEA ITEM 4256, 4275 THRU 42 4322 AND 4341 THRU 4344 FMFAC WILL  RESISTOR A SECONMENDS COMBINING THE FOL 4234, 4253 THRU 4256, 4275 THRU 42	A #: 05-6IC-MRL-11  A: RMS/EPD&C 4322 RESISTOR, R65  AYST: ROBINSON  A: B C  A C  A	A #: 05-6IC-MRL-11 BASELINE A #: 05-6IC-MRL-11 NEW  A: RMS/EPD&C 4322 RESISTOR, R65  LYST: ROBINSON  TT:  CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C  [3/3] [ ] [ ] [ ] [ ] [3/3 ] [ ] [ ] [ ]  [4 ] [ ] [ ] [ ]  ATIONS: (If different from NASA)  [4 ] [ ] [ ] [ ]  ENTION RATIONALE: (If applicable)  ADEQUATE INADEQUATE THE NASA FMEA ITEM IS "INDICATION CIRCUIT PE 1, RESISTORS & EVENT INDICATION", AND IN FMD/MID/AFT PEDESTAL CIRCUIT COMPONENTS. FOR INTERNATIONALES OF THE ASSA THE	##: 05-6IC-MRL-11 BASELINE [ A #: 05-6IC-MRL-11 NEW [  ##: 05-6IC-MRL-11 NEW [  ##: MS/EPD&C	TID: RMS-4322 A #: 05-6IC-MRL-11  MEW [X]  M: RMS/EPD&C 4322 RESISTOR, R65  LYST: ROBINSON  TT:  CRITICALITY REDUNDANCY SCREENS FLIGHT ITEM HDW/FUNC A B C  [3/3] [] [] [] [] [] [] [3/3] [] [] [] []  [4] [] [] [] []  ATIONS: (If different from NASA)  [4] [7] [7] [7] [7] [7]  ENTICALITY REDUNDANCY SCREENS CIL ITEM  COLUMN [1] [] [] [] []  ADEQUATE []  THE NASA FMEA ITEM IS "INDICATION CIRCUIT - HYBR PE 1, RESISTORS & EVENT INDICATION", AND INCLUDES TWD/MID/AFT PEDESTAL CIRCUIT COMPONENTS. FOR  M, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEA 4234, 4253 THRU 4256, 4275 THRU 4278, 4297 THRU 4 4342, AND 4341 THRU 4344 FMEA HITEM 4278, 4297 THRU 4 4322 AND 4341 THRU 4344 FMEA HITEM 4278, 4297 THRU 4

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4323 05-6IC-MRL	<b>-4</b>		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4323 HYBRID REI	ΔΥ, K	24		
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL		EDUNDA	NCY SCREE	NS	CIL ITEM
FLIGH HDW/FU			В	С	
NASA [ 3 /1R IOA [ 3 /2R	] [P	]	[ P ] [ NA]	[ P ] [ NA]	[ ] *
COMPARE [ /N	] [ N	]	[ N ]	[и]	[ ]
RECOMMENDATIONS:	(If dif:	ferent	t from NAS	A)	
[ /	] [	]	[ ]	[ ]	(DD/DELETE)
* CIL RETENTION	RATIONALE:	(If a	applicable	ADEQUATE	

#### REMARKS:

NO ISSUE. IOA CONCURS WITH THE POST 51L CRIT OF 3/1R. IOA SCREENS SHOULD BE 1-P-P. TO COMPARE WITH THE NASA FMEA, IOA RECOMMENDS COMBINING THE FOLLOWING 24 IOA FMEAS: 4201, 4203, 4205, 4207, 4235, 4237, 4239, 4241, 4257, 4259, 4261, 4263, 4279, 4281, 4283, 4285, 4301, 4303, 4305, 4307, 4323, 4325, 4327, AND 4329. THE IOA FMEAS ARE FOR 12 PORT AND 12 STARBOARD HYBRID RELAYS USED BY SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH PORT AND STARBOARD ARMS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4324 05-6IC-MRL-5	nasa d Basel	ATA: INE [ ] NEW [ X ]
SUBSYSTEM:			
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
FLIGH'	r	DANCY SCREENS	CIL ITEM
HDW/FUI	NC A	В С	
NASA [ 3 /1R IOA [ 3 /2R	] [ P ] ] [ ]	[ P ] [ P ] [ NA] [ NA]	[ ] *
COMPARE [ /N	] [ N ]	[и] [и]	[ ]
RECOMMENDATIONS:	(If differen	nt from NASA)	
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)
* CIL RETENTION F	RATIONALE: (If		27
		ADEQUAT INADEQUAT	TE[] TE[]
REMARKS: NO ISSUE.			. ,
IOA CONCURS WITH BE 1 - P - P. IOA COMPARE WITH THE 4202, 4204, 4236,	NASA FMEA. COM 4238, 4258, 4 ARE FOR 6 INDI	RIT OF 3/1R. IOA S MBINING THE FOLLOWING BINE THE FOLLOWING 260, 4280, 4282, 43 VIDUAL PORT AND 6 I	NG IOA FMEAS TO 12 IOA FMEAS:

REPORT DATE 03/02/88 C-266

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMEN ASSESSMEN NASA FMEA	T II	):	RMS-43	25	<sub>-4</sub>					NASA DA' BASELII N	NĒ	[ x	]
SUBSYSTEM MDAC ID: ITEM:	<b>[:</b>		RMS/EF 4325 HYBRID		ΔY,	K27	7						
LEAD ANAI	YST	:	ROBINS	ON									
ASSESSMEN	IT:												
c		ICAL		RE	EDUND	ANC	CY	SCREE	:NS	3		CIL	
		/FUI		A			В			С			
NASA IOA	[ 3 [ 3	/1R /2R	]	[ P	]	[	P NA	]	]	P ] NA]		[	] *
COMPARE	[	/N	]	[ N	]	[	N	1	[	N ]		[	]
RECOMMENI	DATI	ons:	(If	difi	feren	t:	fro	om NAS	SA)				
	[	/	1	[	]	[	•	1	[	]	(AI	[ DD/D	] ELETE)
* CIL RET	ren <b>t</b>	ION :	RATION	ALE:	(If	ap)	pl:	icable		ADEQUAT TAUQUAN		[	]
REMARKS:													

IOA CONCURS WITH THE POST 51L CRIT OF 3/1R. IOA SCREENS SHOULD BE 1-P-P. TO COMPARE WITH THE NASA FMEA, IOA RECOMMENDS COMBINING THE FOLLOWING 24 IOA FMEAS: 4201, 4203, 4205, 4207, 4235, 4237, 4239, 4241, 4257, 4259, 4261, 4263, 4279, 4281, 4283, 4285, 4301, 4303, 4305, 4307, 4323, 4325, 4327, AND 4329. THE IOA FMEAS ARE FOR 12 PORT AND 12 STARBOARD HYBRID RELAYS USED BY SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH PORT AND STARBOARD ARMS.

NASA DATA:

ASSESSMENT DATE: 1/30/88

NASA FMEA #:	RMS-4326 05-6IC-MRL-5		BASELINE NEW	[ ] [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4326 HYBRID RELAY,	K27		
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL: FLIGH	ITY REDUNDA	ANCY SCREEN	s	CIL
HDW/FU		В	С	ITEM
NASA [ 3 /1R IOA [ 3 /2R	] [ P ] ] [ ]	[ P ] [ NA] [	P ] NA]	[ ] *
COMPARE [ /N	] [ N ]	[ N ]	n j	[ ]
RECOMMENDATIONS:	(If different	from NASA	)	
[ /	] [ , ]	[ ] [	] (Al	[ DD/DELETE)
* CIL RETENTION F	RATIONALE: (If a		3 DECITA DE	[ ]
REMARKS: NO ISSUE.			ADEQUATE NADEQUATE	
IOA CONCURS WITH BE 1 - P - P. IOA COMPARE WITH THE 4202, 4204, 4236, THE 12 IOA FMEAS	A RECOMMENDS COM NASA FMEA. COME , 4238, 4258, 42	BINING THE SINE THE FO 60. 4280.	FOLLOWING 12	IOA FMEAS TO IOA FMEAS:

STARBOARD HYBRID RELAYS FOR LATCHING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/24/88 RMS-4327 05-6IC-M	RL-4		NASA DATA: BASELINE NEW	[ x	]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&0 4327 HYBRID R		2			
LEAD ANALYST:	ROBINSON					-
ASSESSMENT:						
	ITY T				CIL	
	NC					
NASA [ 3 /1F IOA [ 3 /2F	[ [	P ] [	P ] [ NA] [	P ] NA]	[	] *
COMPARE [ /N	] [	и] [	и][	N ]	[	]
RECOMMENDATIONS:	(If di	fferent	from NASA	7)		
[ /	] [	] [	) [		[ DD/DI	] ELETE)
* CIL RETENTION	RATIONALE	E: (If ap	plicable) I	ADEQUATE NADEQUATE	[	]
REMARKS: NO ISSUE. IOA CONCURS WITH BE 1-P-P. TO CO COMBINING THE FO 4235, 4237, 4235 4285, 4301, 4305 IOA FMEAS ARE FO SYSTEM 1 AND SYSTEM 1 AND SYSTEM 1 AND SYSTEM 1	OMPARE WIT OLLOWING 2 9, 4241, 4 3, 4305, 4 OR 12 PORT	TH THE NA 24 IOA FM 4257, 425 4307, 432	SA FMEA, EAS: 420 9, 4261, 3, 4325, STARBOARI	10A RECOMM 01, 4203, 4 4263, 4279 4327, AND 0 HYBRID RE	205, , 42; 4329 LAYS	4207, 81, 4283 . THE USED BY

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 2/16/88 RMS-432 05-6IC-	3 28 -MRL-6		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4328 HYBRID	RELAY,	K12		
LEAD ANALYST:	ROBINSC	N			
ASSESSMENT:					
CRITICA: FLIG		REDUND	ANCY SCRE	ens	CIL ITEM
HDW/F	С	IIEM			
NASA [ 2 /1] IOA [ 3 /2]	R ] [	P ]	[ F ] [ NA]	[ P ] [ NA]	[ X ] *
COMPARE [ N /N	] [	n j	[ N ]	[ N ]	[ N ]
RECOMMENDATIONS	(If d	ifferen	t from NAS	SA)	
[ /	] [	]	[ ]		[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	:)	
REMARKS: NO ISSUE.				ADEQUATE INADEQUATE	[ ]
IOA CONCURS WITH BE 1 - P - P. ]	OA RECOM	MENDS CO	OMBINING T	R. IOA SCRI	EENS SHOUL G IOA FMEA

JD S TO COMPARE WITH THE NASA FMEA. COMBINE THE FOLLOWING 6 IOA FMEAS: 4206, 4208, 4240, 4242, 4262, 4264, 4284, 4286, 4306, THE 12 IOA FMEAS ARE FOR 6 INDIVIDUAL PORT AND 6 INDIVIDUAL STARBOARD HYBRID RELAYS FOR RELEASING.

ASSESSMEN ASSESSMEN NASA FMEA	T T #	DA ID	TE:	1/2 RMS 05	24/8 5-43 -6IC	8 29 -M	RL	-4					NA: B.	SA D ASEL	INE	[ x	]		
SUBSYSTEM MDAC ID:				43	S/EF 29 BRIC			ΑY,	K29										
LEAD ANA	LYS	T:		RO	BINS	ON	1												
ASSESSME																OTT			
CRITICALITY REDUNDANCY SCREENS CIL  FLIGHT  TOTAL CONTROL OF THE METERS																			
FLIGHT HDW/FUNC A B C																			
HDW/FUNC A B C  NASA [ 3 /1R ] [ P ] [ P ] [ P ] [ INA] [ NA] [ NA														[	]	*			
COMPARE																[	]		
RECOMMEN	DA	TI	ons:	}	(If	d	if	fere	ent	fr	om N	ASA	)						
											3			]	( <b>2</b>	[ 	] ELE	ETE)	
* CIL RI	ETE	ΓN	NOI	RA'	TION	IAI	Œ:	(I:	f ap	pl	icab	ole) I	A NA	DEQU DEQU	ATE ATE	[ [	]		
REMARKS: NO ISSUI IOA CON BE 1-P-: COMBINII 4235, 4 4285, 4 IOA FME	E. CUP P. NG 237 301	TI TI 7, 1,	FO C HE F 423 430	OMP OLI 9,	ARE OWII 424 430	W. NG 1, 5,	24 42 43	10 257,	A FN 425 432	1E2 59 23	As: , 42:	420 61, 25,	42	420 263, 327,	03, 4 427 AND	4205 9, 4: 432 ELAY	, 4 281 9. S U	207, , 4283, THE SED BY	,

PORT AND STARBOARD ARMS.

SYSTEM 1 AND SYSTEM 2, FWD, MID, AND AFT LATCH/RELEASE FOR BOTH

ASSESSMEI ASSESSMEI NASA FME	NT NT A #	DATE ID:	E: :	2/16/ RMS-4 05-6]	/88 133 [C-	3 3 O -MF	RL−€	5						DATA ELINE NEV	] 2		]		
SUBSYSTEM MDAC ID: ITEM:	ı:		4	RMS/E 4330 HYBRI				', к	29	9					-		-		
LEAD ANAI	LYS!	T:	F	ROBIN	so	N													
ASSESSMEN	T:																		
c	1	CTITC	H.T.						NC	ΣY	SCI	REEN	S		_	IL EM	•		
				:						В			С						
NASA IOA													P ] NA]		[	X	]	*	
COMPARE	[ N	I /N	]		[	N	]	1	[	N	]	[	n j			N			
RECOMMEND	ATI	ONS:	,	(If	di	if1	ere	ent	f	ro	m N	ASA)							
	[	/	]		[		]	[			]	ſ	]	(AI	[ DD/1	DE I	] LE:	ΓE)	
* CIL RET	ENT	ION	RA	rion <i>a</i>	LE	:	(If	ap	p.	lio	cab	le)	ADEOU	ATE	r		,		
REMARKS: NO ISSUE.												IN.	ADEQU	ATE	[	-			
IOA CONCUE BE 1 - P - TO COMPARE FMEAS: 42 THE 12 IOA STARBOARD	06, FI	ITH ' , 42 MEAs	THE 08,	NAS 424	A O,	FM 4	EA. 242	C(), 4:	OM 26	IBI	NE NE 42	THE 264,	FOLL	OWING	6	)A IC	FM A	IEAS	

STARBOARD HYBRID RELAYS FOR RELEASING.

ASSESSME ASSESSME NASA FME	NT NT A #	DA ID	TE:	2/1 RMS 05-	4/8 -43 6ID	8 31 -2	12	6-1								DATA ELINI NE			]			
SUBSYSTE MDAC ID: ITEM:	M:			RMS 433 REL	/EP 1	מע	C															
LEAD ANA	LYS	ST:	:	ROE	INS	01	Ī															
ASSESSME	NT:	:																				
	CR		CAL				RE	ואטם:	DANG	CY	SC	REE	NS	;				IL TE				
	I		LIGH W/FU				A			В				С								
NASA IOA	[	2	/1R /2R	]		[	P	]	]	P N	] A]		[ [	P NA	]		[	X	]	*		
COMPARE	[	N	/N	]		[	N	]	[	N	]		[	N	]			N	]			
RECOMMEN	IDA'	rI(	ons:		(If	d	ifi	fere	nt	fr	om	NAS.	A)	)								
	[		/	]		[		]	[		]		[	P	1	(			EL.	ETE)	)	
* CIL RI	ETE	NT	ION	RAT	ION	ΑL	Е:	(If	ap	pl	ica			A	DEÇ	ITAU( ITAU(	€ (	[	]			
REMARKS NO ISSUITHE IOA THE MAN SET OF I DO NOT I POSITIO	E. FM IPU NAS	EA LA A	FOR FME	RET AS A EN C	ILU ENT LSO OMP ELA	RE IO A AR	N ND ED	F TH LATC THE . I	ESE H C REF HE PPE	ON OR RE	TRO E I LAY	AYS OL C THE YS A	W.I.R.R.T	RCI ESI E H	UII ULI 4 I THI	WHI OF	ICH THI , 2 TCH	IS E I	O S IAT	5-6 LUR ROL	ËS	

THE JETTISON/GUILLOTINE CIRCUITS. IOA CONCURS WITH THE NASA

FAILURE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4332 05-6ID-2129-1	NASA DATA: BASELINE [ X ] NEW [ ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4332 RELAY, K17	
LEAD ANALYST:	ROBINSON	
ASSESSMENT:		
CRITICAL FLIGH	EENS CIL	
HDW/FU	С	
NASA [ 3 /3 IOA [ 3 /2R	[ P ] [ ] * [ NA] [ ]	
COMPARE [ /N	[и] [ј	
RECOMMENDATIONS:	(If different from NA	.SA)
[ 3 /2R	] [ ] [ ]	[P] [] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If applicabl	e) ADEQUATE [ ] INADEQUATE [ ]
THE IOA FMEA FOR THE MANIPULATOR SET OF NASA FMEA DO NOT MATCH WHE POSITION LATCHING	RETENTION LATCH CONTROL S S ALSO AND THEREFORE THE N COMPARED. THE RELAYS	R. RECOMMEND COMBINING  WAS GENERATED AS PART OF CIRCUIT WHICH IS 05-61 RESULT OF THE FAILURES ARE 4 POLE, 2 OTH THE LATCH CONTROL AND

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-4333 05-6IC-MRL-7A	NASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4333 FUSE, 2 AMP, F3	
LEAD ANALYST:	ROBINSON	
ASSESSMENT:		
CRITICAL FLIGH	CY SCREENS CIL ITEM	
HDW/FU	INC A	В С
NASA [ 3 /1F IOA [ 3 /3	[P] [P] [	P ] [ P ] [ ] *
COMPARE [ /N	] [N] [	и] [и] [ ]
RECOMMENDATIONS:	: (If different	from NASA)
[ /	] [ ] [	[ ] [ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If ap	oplicable) ADEQUATE [ ] INADEQUATE [ ]
MULTIPLE FAILUR INABILITY TO SA GUILLOTINE/JETT COULD RESULT IN CORRESPONDS TO 4267, 4268, 428	ES COULD CAUSE MOT FELY LATCH THE RMS ISON SYSTEM LOSS OF CREW/VEHI THE FOLLOWING IOA	RECT IOA SCREENS. SUBSEQUENT FOR BURNOUT AND COULD LEAD TO S AND SUBSEQUENT FAILURE OF THE  ICLE. THIS ONE NASA FMEA FMEAS: 4211, 4212, 4245, 4246, 12, 4333, AND 4334. IOA IOA FMEAS INTO ONE A POST 51L FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/30/88 RMS-433 05-6IC-	4 MRL-7A		NASA D BASEI	DATA: LINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4334 FUSE, 2		3		
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICALI FLIGHT	TY	REDUND	ANCY SCR	REENS	CIL
HDW/FUN		A	В	С	ITEM
NASA [ 3 /1R IOA [ 3 /3	] [	P ]	[ P ] [ ]	[ P ] [ ]	[ ] *
COMPARE [ /N	] [	n j	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If di	fferent	from N	ASA)	
[ /	) [	]	[ ]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION R	ATIONALE	: (If a	pplicab		
REMARKS:				ADEQUAT INADEQUAT	E [ ]
UPGRADE IOA CRIT ON MULTIPLE FAILURES INABILITY TO SAFEI GUILLOTINE/JETTISC COULD RESULT IN LOCORRESPONDS TO THE 4267, 4268, 4289, RECOMMENDS COMBINITO ALLOW COMPARISC	LY LATCH ON SYSTE OSS OF C E FOLLOW 4290, 4 ING ALL	AUSE MO THE RM M REW/VEH ING IOA 311, 43	TOR BURN S AND SU ICLE. T FMEAs: 12, 4333	OUT AND COURSEQUENT FULL ONE NA 4211, 4212, 4213, AND 4334	ULD LEAD TO AILURE OF THE SA FMEA , 4245, 4246,

ASSESSME ASSESSME NASA FME	NT I		1/25 RMS- 05-6	4335		-12						SA DATA ASELINE NEW		_	
SUBSYSTE MDAC ID: ITEM:	M:		RMS/ 4335 RESI			R49									
LEAD ANA	LYST	:	ROBI	NSON	ſ										
ASSESSME	ASSESSMENT:														
	CRITICALITY REDUNDANCY SCREENS CIL ITEM														
CRITICALITY REDUNDANCE SCREENS															
NASA IOA	[ 3	/3	]	]	N	]	[	N	]	[ [	N	]	[ [	]	*
COMPARE	[	/	]	[	N	]	[	N	]	[	N	]	[	]	
RECOMMEN	DATI	ons:	(1	f d:	ifi	fere	nt :	fr	om N	IASA)	)				
	[	/	)	(		]	[		]	[		] (A	[ .DD/E	ELI	ETE)
* CIL RE	TENT	rion	RATIO	NAL	Ε:	(If	ap	pl:	icak			DEQUATE DEQUATE	_	]	
REMARKS: NO ISSUE CIRCUIT' IOA FMEA		יים עינ	ያው ውል	TIIR'	DI'	MODE VIDU	AS AL	(II) (CO	ERRO MPON	ONEO! VENT:	US S.	TO LATCH INDICAT FOR CO	'ION' AAAM	RIS	ON

PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4335 THRU 4338.

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4336 NASA FMEA #: 05-6IC-MRL-12 SUBSYSTEM: RMS/EPD&C																		ASA DA' BASELII N	NE				
SUBSYSTE MDAC ID:	M:				4	RMS/E 336 RESIS				R22													
LEAD ANA	LY	SI	::		F	ROBIN	SO:	N															
ASSESSME	NT	:																					
THE TANK														CIL									
HDW/FUNC A B C														-									
NASA IOA	[	3		/3 /3	]	] [N] [N] [N] []											[	]	*				
COMPARE	[		,	/	]		[	N		]		[	N	]	(		N	]		[	)		
RECOMMEN	DA'	TI	(O	NS:		(If	<b>d</b> :	if	f	eren	t	f	ro	om NA	SA	.)							
	[		,	/	]		[			]	1	[		]	[			1. (	[Al	[ DD/DE		ET1	Ξ)
* CIL RE	TE	ΝT	I	ON :	RA	TION	ΑLI	Ξ:		(If	aŗ	pp	li	icable	e)			•					
REMARKS:															I	N.	AI AI	EQUATE EQUATE	) }	[	]		
NO ISSUE CIRCUIT" IOA FMEA PURPOSES 4213 THR 4313 THR	W: s i , :	IT AD IO 42	H DI A 16	TH: RES: RE:	E S CO: 42	FAILU THE 1 MMENU 47 TH	JRI INI OS IRI	E N DIV CC J 4	M(V) ON	ODE I IDUA: MBIN: 750,	AS L IN 4	S C IG I 2	PE OM I 69	ERRONI IPONEI THE FO	EO' NT: OL	U: S L:	S • OW	INDICA FOR C	T]	. "ION" "IPARI EMED	SC	TF ON	ΙE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/25/88 RMS-4337 05-6IC-N	7 MRL-	-12			-		SA DATA: ASELINE NEW		
SUBSYSTEM: MDAC ID:	RMS/EPD8	&C								
LEAD ANALYST:	ROBINSO	N								
ASSESSMENT:										
CRITICAL		RE	DUNDAI	NCY	SCREE	NS			CIL	
FLIGH HDW/FU	NC	A		В			С			
NASA [ 3 /3 IOA [ 3 /3	] [	N	]	( N [	]	[ [	N	]	[	] <b>*</b> ]
COMPARE [ /	] [	N	}	[ N	]	E	N	]	[	]
RECOMMENDATIONS:	(If d	iff	erent	fr	om NAS	SA)				
. [ /	] [		]	[	]	[		] (A)	[ DD/DI	] ELETE)
* CIL RETENTION	RATIONAL	E:	(If a	ppl.	icable		AI IAI	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE. THE N CIRCUIT" WITH TH IOA FMEAS ADDRES PURPOSES, IOA RE 4213 THRU 4216, 4313 THRU 4316,	IE FAILUR SS THE IN COMMENDS 4247 THR	E M DIV CC U 4	IODE A IDUAL MBINI 1750,	S " CO NG 426	ERRONI MPONEI THE FO	SOU NTS DLI		FOR COINING IOA	MPAR FME	ISON As:

ASSESSM ASSESSM NASA FM	ENT	I	D:	RMS	5/88 -433 6IC-	8	L-1	2						DAT <i>a</i> ELINE NEW		] x ]	
SUBSYST				433	/EPD 8 ISTO			3									
LEAD AN	ALY	ST	:	ROB	INSO	N											
ASSESSMI	ENT	:															
		F	LIG			R	EDU:	NDAI	1CY	SCF	REEN	S			CI		
		HD	W/Ft	JNC		A			В	<b>,</b>		С					
NASA IOA	[	3 3	/3 /3	]	]	N	]		N	]	[ [	N	]		]	]	*
COMPARE	[		/	3	[	N	]		N	]	(	N	J		[	]	
RECOMMEN	IDA!	ri(	ons:	(:	If di	Ĺf	fer	ent	fr	om N	IASA)	)					
	[		/	]	(		]	[		]	[		]	(A	[ DD/I	) DELI	ETE)
* CIL RE	ETE	T	CON	RATIO	ONALE	E:	(I:	f ar	pl	icab	le)						
REMARKS:											I		_	JATE JATE	[	]	
NO ISSUE	E .		HE N	ASA I E FA]	MEA	II N	rem 10di	IS E AS	TH	E "R ERRO	EADY	r 1 JS	O I	ATCH DICAT	INI "NOI	OICA	TIOI THE

IOA FMEAS ADDRESS THE INDIVIDUAL COMPONENTS. FOR COMPARISON PURPOSES, IOA RECOMMENDS COMBINING THE FOLLOWING IOA FMEAS: 4213 THRU 4216, 4247 THRU 4750, 4269 THRU 4272, 4291 THRU 4294, 4313 THRU 4316, AND 4337 AND 4338.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4339	AS-4339 5-6IC-MRL-7 NEW [X AS/EPD&C 339											
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4339 RESISTOR,												
LEAD ANALYST:	ROBINSON												
ASSESSMENT:													
CRITICAL		REDUNDAN	CY SCREE	NS	CIL ITEM								
FLIGH HDW/FU		A	В	С									
NASA [ 3 /1R IOA [ 3 /2R		P ] [ ] [	P ] NA]	[ P ] [ NA]	[	) * ]							
COMPARE [ /N	j [ ]	и] [и	N ]	[ N ]	[	]							
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)									
[ /	] [	] [	]	[ ] (A	[ .DD/DE	] LETE)							
* CIL RETENTION	RATIONALE	: (If ar	plicable	ADEQUATE		]							
REMARKS: IOA CONCURS WITH	H NASA FME	A. UPGI	RADE IOA	CRIT TO 3/1 ES COULD CAU	R ANI	CORRECTOR							

T IOA SCREENS. SUBSEQUENT MULTIPLE FAILURES COULD CAU BURNOUT AND COULD LEAD TO INABILITY TO SAFELY LATCH THE RMS AND SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH NASA POST 51L FMEA.

ASSESSM ASSESSM NASA FM	ENT	'I	D:	R	/30/88 MS-434 5-6IC-	0	L-7					N		DATA ELINE NEW		) X ]		
SUBSYST				4	MS/EPD 340 ESISTO											-		
LEAD AN	ALY	ST	:	R	OBINSO	N												
ASSESSMI	ENT	:																
		F	ICAL LIGH W/FU	r	Y	R:	EDUI	NDAN	CY B	sc	REEN				CII			
NASA			•				_	_	_			С						
IOA		3	/1R /2R	]	[	P	]	[	P N#	) [		P N			[	]	*	
COMPARE	[		/N	]	[	N	]	[	N	]	[	N	]		[	]		
RECOMMEN	[ADI	ric	ons:		(If d	if1	ere	ent i	fro	m N	IASA)	)	•					
	[		/	]	[		]	[		]	[		]	(AI	[ DD/D	] ELF	TE)	)
* CIL RE	TEN	ΙTΙ	ON F	ras	'IONALE	E :	(If	app	oli	cab	ole)							
REMARKS:											IN		EQU.		[	]		
IOA CONC	URS	W	ITH	NA	SA FME	A.	U	PGRA	DE	ΤO	A CE	тт	т_	2 / 1 D	3 371	_	~~~	

IOA SCREENS. SUBSEQUENT MULTIPLE FAILURES COULD CAUSE MOTOR ADE TOA CRIT TO 3/1R AND CORRECT BURNOUT AND COULD LEAD TO INABILITY TO SAFELY LATCH THE RMS AND SUBSEQUENT FAILURE OF THE GUILLOTINE/JETTISON SYSTEM WHICH COULD CAUSE LOSS OF CREW/VEHICLE. THIS ONE NASA FMEA CORRESPONDS TO THE FOLLOWING 12 IOA FMEAS: 4217, 4218, 4251, 4252, 4273, 4274, 4295, 4296, 4317, 4318, 4339 AND 4340. IOA RECOMMENDS COMBINING ALL LISTED IOA FMEAS INTO ONE TO ALLOW COMPARISON WITH NASA POST 51L FMEA.

ASSESSME ASSESSME NASA FME	NT NT A #	DA ID	TE:	1/2: RMS- 05-	5/88 -434 6IC-	1 MRL-	-11				SA DATA ASELINE NEW	[	) x ]		
SUBSYSTE MDAC ID:				RMS 434 RES	/EPD 1 ISTO	&C R, 1	R34								
LEAD ANA	LYS	ST:		ROB	INSO	N									
ASSESSME	ENT:	:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT HDW/FUNC A B C															
FLIGHT HDW/FUNC A B C															
HDW/FUNC A B C  NASA [ 3 /3 ] [ ] [ ] [ ] *  IOA [ 3 /3 ] [ ] [ ] [ ]															
	NASA [ 3 /3 ] [ ] [ ] [ ] [ ] [ ] COMPARE [ / ] [ ] [ ] [ ]														
RECOMME	NDA'	TI	SNC:	; (	(If o	diff	erent	t fro	om NAS	SA)					
	[		/	3		[	]	[	]	Į	] (2	DD/	/DE	] LETE	:)
* CIL R	ETE	NT	ION	RAT:	IONA	LE:	(If	appl	icable	e) A INA	DEQUATE DEQUATE	[		]	
DRIVER SYSTEM COMPARI	E. TYP 1 F	E WD	1, 1 /MI IOA	RESI D/AF REC	STOR T PE OMME	S & DEST	EVEN TAL C COMB	IRCU ININ	IT COL	TION TION MPON FOL	CIRCUIT, AND ENTS. LOWING 78, 429 TH 3/3	r - Inc: For Ioa 7 T:	HY LUD FM HRU	BRII ES IEAs:	: 00,

ASSESSMENT DATE: 1/25/88 ASSESSMENT ID: RMS-4342 NASA FMEA #: 05-6IC-MRL-11 SUBSYSTEM: RMS/EPD&C										.1				NAS BA	A DATA SELINE NEW	.:   [   [ ;	] x ]	
SUBSYS MDAC I ITEM:	TEM	:				RM 43	IS/E 42	PD&	C , R3								_	
LEAD A	NAL	YS	T	:		RO	BIN	SON										
ASSESS	MEN'	г:																
	CI		F]	JIC	THE	•			REDU	NDA	NCY	sc	REEN	IS		CII		
		Н	DV	V/ E	'UN	C		1	A		В	3		С				
NAS. IO.	A   A		3 3	/3 /3	3	]		[	]		[ [	]	[	]		[	]	*
COMPAR	E {	•		/		]		[	]	l	[	]	[	]		[	]	
RECOMMI	ENDA	T.	IC	NS	:		(If	dii	fere	ent	fr	om N	VASA	)				
	[			/		]		[	]	[	•	]	[	]	(AI	[ DD/D	] ELET	ΓE)
* CIL I	RETE	N.	ΓI	ON	R	AT]	[ONA	LE:	(If	ar	pl	icab	ole)					
									•	•	•		,	ADEQ	UATE UATE	[	]	
REMARKS																		
NO ISSU DRIVER SYSTEM COMPARI 4219 TH	1 F	WE	)/: I	MI OA	D/I	AFT	PE MME	DES NDS	TAL	NT CIR	CUI TNC	TT C	ATIO OMPO	ON", ONENT	AND IN	CLUI R	DES	
4219 TH 4319 TH REQUIRE																		

NASA DATA:

ASSESSMEN ASSESSMEN NASA FME	TV TV A #	DA II	TE:	: 1/25 RMS- 05-6	/88 4343 IC-MR	L-11			N	ASA I BASEI		[		
SUBSYSTEM MDAC ID:					}		;							
LEAD ANA	LYS	T:	:	ROBI	NSON									
ASSESSME	NT:	:												
•	CR			LITY	R	EDUN	IDANCY	SCR	EENS			CII		
	I			TUNC	A		В		C	:				
NASA IOA				]						]				*
COMPARE	[		/	]	C	)	[	]	[	3		[	]	
RECOMMEN	DA'	rI	ons	s: (:	[f dif	fere	ent fr	om N	VASA)					
	[		/	)	[	]	[	]	£	]		[ DD/I		ETE)
* CIL RE	TE:	ΝT	IOI	N RATI	ONALE:	(I:	f appl	icak	ole) IN	ADEQU ADEQU	ATE ATE	[	]	
REMARKS: NO ISSUE DRIVER T SYSTEM 1 COMPARIS 4219 THR 4319 THR	YP F	E WD	1, /MI IO	RESIS' ID/AFT A RECO	FORS & PEDES MMENDS	E EVE STAL S COE	ENT IN CIRCU MBININ 6. 427	DIIC IT ( G TI 5 TI	CATION COMPON HE FON HRU 4	N", A NENTS LLOWI 278,	ND I NG I 4297	NCLO OR OA I	FME	As: 4300

ASSESSMI ASSESSMI NASA FMI	A'I	TE:	1, RI 0!	/25/ MS-4 5-6I	88 344 C-MR			ì	NASA D BASEL	INE							
SUBSYSTI MDAC ID ITEM:	EM:				RI 4:	MS/E 344	PD&C										
LEAD AND	ALY	ST	:		R	DBIN	SON										
ASSESSMI	ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL																
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																	
FLIGHT HDW/FUNC A B C																	
NASA [ 3 /3 ] [ ] [ ] [ ] * IOA [ 3 /3 ] [ ] [ ] [ ] [ ]																	
COMPARE	[		/		]		[	]	[	]	[	]		[	]		•
RECOMMEN	IDA'	TI	ON	s:		(If	dif	feren	t fro	om NA	SA)						
	[		/		]		[	]	[	]	[	]	(AI	[ DD/DI		TE	:)
* CIL RE		NT:	IO	N I	RAI	'ION?	ALE:	(If	appli	icabl	A	DEQUA:	re re	[	]		
NO ISSUE DRIVER T SYSTEM 1 COMPARIS 4219 THR 4319 THR	YPI FV SON, RU 4	E WD, 42:	1, /M IO 34 22	RI ID, A I , 4	ESI 'AF REC 125 ID	STOR T PR OMME 3 TH 4341	RS & EDEST ENDS IRU 4 . THF	EVEN FAL C COMB	T INI IRCUI ININO 4275	DIICA' TT COI THE	TION MPON FOL	", ANI ENTS. LOWING	FO FO FO	ICLUI R A FN	DES MEA	s:	0

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4345X	1		SA DATA: ASELINE NEW		
MDAC ID:	RMS/EPD&C 4345 FUSE, F3, F	4				
LEAD ANALYST:	ROBINSON					
ASSESSMENT:						
CRITICAL: FLIGHT	TY RED	UNDANCY	SCREENS		CIL ITEM	
HDW/FU		В	С			
NASA [ 3 /1R IOA [ 3 /1R	] [ P ]	[ P	] [ P ] [ P	]	[	] <b>*</b> ]
COMPARE [ /	] [ ]	[	] [	]	[	]
RECOMMENDATIONS:	(If diffe	erent fro	om NASA)			
[ /	] [ ]	] [	] [	] (AI	[ DD/DE	] ELETE)
* CIL RETENTION	RATIONALE: (	(If appli	Al	DEQUATE DEQUATE	[	]
REMARKS: NO ISSUE. IOA C RECOMMENDS GENER THIS FAILURE MOD	ATING A COM	THE NASA PARABLE I	A POST 51: FMEA FOR '	L FMEA. THESE COI	IOA MPONI	ENTS WITH

ASSESSMI ASSESSMI NASA FMI	88 34 C-1	6X MR	L-2A							ASA BASE		<u> </u>								
SUBSYSTE MDAC ID:	EM:			4	MS/E 346 WITC															
LEAD ANA	LY	ST	:	R	OBIN	SOI	N													
ASSESSME	ASSESSMENT:																			
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																				
HDW/FUNC											В			С			-	L	1	
NASA IOA	NASA [ 2 /1R ] [ P ] IOA [ 2 /1R ] [ P ]										P P	]	]	P P	]		[	X X	]	*
COMPARE	[		/	]		[		]	(	•		]	[		]		[		]	
RECOMMEN	DAT	ric	ons:		(If	di	lff	ere	nt	f	ro	m N	ASA)	)						
	[		/	]		[		]	(			]	[		]		[ DD/			ETE)
* CIL RE	TEN	TI	ON 1	RAI	ION	LE	:	(If	ap	p]	lί	cab:	le)							
* CIL RETENTION RATIONALE: (If REMARKS:													IN	AI IAI	DEQU <i>E</i> DEQU <i>E</i>	TE	[		]	
NO ISSUE RECOMMEN THIS FAI	DS LUF	GE ₹E	ENERA MODI	ATI E.	NG A	, C	OM	IPARA	ABL	E	F	MEA	FOF	? ]	THIS	COM	PON	IEN		
IOA RECO	MME	END	S C	OME	BININ	Ğ	NA	SA F	ME	As	3	05-6	SIC-	MF	RL-2A	, 2	Ε,	AN	D	2F.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	DMS-4347	7 X		NASA DATA BASELINE NEW								
	RMS/EPD8 4347 SWITCH,											
LEAD ANALYST:	ROBINSON	1										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL ITEM												
HDW/FU		A	В	С								
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *							
COMPARE [ /	] [	]	[ ]	[ ]	[ ]							
RECOMMENDATIONS:	(If d	ifferent	from NA	ASA)								
[ /	] [	]	[ ]	[ ] (A)	[ .DD/DELETE)							
* CIL RETENTION	RATIONAL	E: (If a	pplicabl	le) ADEQUATE INADEQUATE	•							
REMARKS: NO ISSUE. IOA C RECOMMENDS GENER THIS FAILURE MOD	ATING A	COMPARAB	LE FMEA	FOR THIS COM	IPONENI WIII							
IOA RECOMMENDS C	OMBINING	NASA FM	LEAS US-	OIC-MRL-20, -	-20, MIO -2G							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/18/88 RMS-434 05-6IC-	8X MRL-2C		NASA DATA BASELINI NEV	
SUBSYSTEM:	RMS/EPD 4348 SWITCH,	&C			
LEAD ANALYST:	ROBINSO	4			
ASSESSMENT:					
CRITICAL: FLIGHT		REDUNDA	NCY SCRE	EENS	CIL ITEM
HDW/FU	4C	A	В	С	1154
NASA [ 3 /3 IOA [ 3 /3	] [	P ] [	P ]	[ P ] [ ]	[ ] *
COMPARE [ /	] [	и ] [	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If di	fferent	from NA	.SA)	
[ /	] [	] [	]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION F	RATIONALE	: (If ap	plicabl	ADEQUATE	[ ]
REMARKS:				INADEQUATE	[ ]
NO ISSUE. IOA CO RECOMMENDS GENERA THIS FAILURE MODE	TING A C	TH THE NOTICE OF THE NAME OF T	ASA POS E FMEA	T 51L FMEA. FOR THIS COM	IOA PONENT WITH

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4349	9X MRL-2D		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4349 SWITCH,				
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL		REDUNDAN	ICY SCREE	NS	CIL ITEM
FLIGH HDW/FU	IT INC	A	В	С	
NASA [ 2 /11 IOA [ 2 /11	R ] [	P ]   P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS	: (If d	ifferent	from NAS	A)	٠
[ /	] [	1	[]	[ ] A)	[ ] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	pplicable	ADEQUATE	
REMARKS: NO ISSUE. IOA RECOMMENDS GENE THIS FAILURE MO IOA RECOMMENDS	RATING A	COMPARAB	LE FMEA F	OR THIS COL	II ONDIVI WILLIAM

ASSESSME ASSESSME NASA FME	ENT ENT EA #	DATE: ID: :	2/18/ RMS-4 05-61	OX MR						ASA DATA BASELINI NEV	E (					
SUBSYSTE MDAC ID: ITEM:	EM:		RMS/E 4350 SWITC	PD	&C											
LEAD ANA	LYS'	T:	ROBIN	SO	N											
ASSESSME	NT:															
	CRI	PICAL FLIGH	ITY T		R	EDUND.	AN	CY	SCRE	EN:	S			I L TEI		
	HI	OW/FU	NC		A			В			С		_	1 151	1	
NASA IOA	[ 2	2 /1R 2 /1R	]	[ [	P P	]	[	P P	]	]	P P	]	[	X X	]	*
COMPARE	[	/	]	[		]	[		3	[		]	[		]	
RECOMMEN	DATI	ons:	(If	di	.f1	ferent	t 1	fro	m NA	SA)			-			
	[	/	]	[		J	[		]	[				'DE		ETE)
* CIL RE	TENT	ION I	RATIONA	<b>ALE</b>	:	(If a	app	li	.cabl	e)						
REMARKS:										IN	AI AI	EQUATE EQUATE	]		]	
NO ISSUE. RECOMMENI THIS FAIL	US G LURE	ENERA MODE	ATING A	C	OM	PARAE	3LE	F	MEA 1	FOR	T	HIS COM	PON	EN		
IOA RECON	MEN	DS CC	MBININ	īG	NA	SA FM	ſΕΑ	s	05-6]	[C-	MR	L-2A, 2	Ε,	AN	D	2F.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/18/88 RMS-4351 05-6IC-M	.X IRL-2F		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4351 SWITCH,				
LEAD ANALYST:	ROBINSON	ī			
ASSESSMENT:					
CRITICAL		REDUNDA	NCY SCRI	EENS	CIL ITEM
FLIGH HDW/FU		A	В	С	
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from N	ASA)	
[ /	] [	1	[ ]	[ ] (2	[ ] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	npplicab	le) ADEQUATE INADEQUATE	
REMARKS: NO ISSUE. IOA C RECOMMENDS GENER	RATING A	ITH THE	NASA PO BLE FMEA	ST 51L FMEA. FOR THIS CO	IOA MPONENT WITH
THIS FAILURE MOI	DE. COMBINING	NASA FI	MEAs 05-	6IC-MRL-2A,	2E, AND 2F.

ASSESSMI ASSESSMI NASA FMI	ASSESSMENT DATE: 2/18/88 ASSESSMENT ID: RMS-4352X NASA FMEA #: 05-6IC-MRL-2G												ASA DA BASELI N		[			
	EM:			RMS/E 4352	RMS/EPD&C													
LEAD ANA	LY	ST	:	ROBIN	so	N												
ASSESSME	ENT	:																
	CR	IT:	ICAL: LIGH:	ITY T		RI	EDUND	AN	CY	SCRI	EENS	S				IL CEN		
	1	HDI	W/FUI	NC		A			В			С			1.	LEI	1	
NASA IOA	[	2	/1R /1R	]	[	P P	]	[	P P	]	]	P P	]		[	X X	]	*
COMPARE	[		/	]	[		1	[		]	[		]		[		]	
RECOMMEN	DAT	ric	ons:	(If	di	ff	feren	t 1	rc	m NA	SA)							
	[		/	]	[		]	[		]	[					DE		TE)
* CIL RE	TEN	ITI	ON F	RATIONA	ALE	:	(If a	app	li	.cabl								
REMARKS:											IN	AD	EQUATI EQUATI	E	[		]	
NO ISSUE RECOMMENT THIS FAIT	DS LUR	GE RE	NERA MODE	TING A	7 C	OM	IPARAE	3LE	F	MEA	FOR	T	HIS CO	OMP		EN		
IOA RECO	MME	ND	s co	MBININ	IG	NA	SA FM	ΙEΑ	s	05-6	IC-	MR	L-2B,	-2	D,	A	ND	-2G.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/24/88 RMS-4353X 05-6IC-MRL	-8	NASA DATA: BASELINE [ ] NEW [ X ]								
	RMS/EPD&C 4353 LIMIT SWIT	CH - LATCHED &	RELEASED								
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL		DUNDANCY SCREEN	S	CIL ITEM							
FLIGH HDW/FU		В	С								
NASA [ 3 /1R IOA [ 3 /1R	] [ P ]	] [P] [ ] [P] [	P ] P ]	[ ] *							
COMPARE [ /	] [	] [ ] [	1	[ ]							
RECOMMENDATIONS:	(If diff	erent from NASA	7)								
[ /	j (	] [ ] [	[ ] (A)	[ ] DD/DELETE)							
* CIL RETENTION	RATIONALE:		ADEQUATE	[ ]							
REMARKS: NO ISSUE. IOA C GENERATE A CORRE	ONCURS WITH	H NASA POST 51L MEA TO ALLOW ASS	FMEA. REC	OMMEND IOA							

	2/24/88 RMS-435 05-6IC-	4X		NASA DA BASELI N	
	RMS/EPD 4354 LIMIT S		- RELEASE		
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAI FLIGH HDW/FU	T	REDUND	DANCY SCR B	EENS C	CIL ITEM
NASA [ 3 /2R IOA [ 3 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [ /N	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If d	ifferen	t from N	ASA)	
. /	] [	]	[ ]		[ ] (ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If	applicab:	le) ADEQUATI INADEQUATI	. ,
REMARKS: NO ISSUE. IOA C GENERATE A CORRE	ONCURS WI	ITH NAS. FMEA T	A POST 5:	LL FMEA. R	COMMEND IOA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/24/88 RMS-4355 05-6IC-M			NASA DATA BASELINE NEW							
	RMS/EPD&4355 LIMIT SW	55 MIT SWITCH - LATCH									
LEAD ANALYST:	ROBINSON										
ASSESSMENT:											
CRITICAL FLIGH		REDUNDA	NCY SCRE		CIL ITEM						
HDW/FU	NC	A	В	С							
NASA [ 3 /1R IOA [ 3 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ ]	*					
COMPARE [ /	] [	]	[ ]	[ ]	[ ]						
RECOMMENDATIONS:	(If di	.fferent	from NA	SA)							
[ /	] [	3	[ ]	[ ] (A)	[ ] DD/DEI						
* CIL RETENTION	RATIONALE	E: (If a	applicabl	.e) ADEQUATE INADEQUATE		 					
REMARKS: NO ISSUE. IOA C GENERATE A CORRE	CONCURS WI	TH NAS	A POST 51 O ALLOW ?	LL FMEA. REC ASSESSMENT.	OMMENI	AOI (					

ASSESSMI ASSESSMI NASA FMI	ENT	ID:	RMS	7/87 -4501 6ID-20	036-1			nasa i Basei	
SUBSYSTE MDAC ID:			450	/EPD&0 l rch, s					
LEAD ANA	LYS	ST:	ROB	INSON					
ASSESSME	ENT:								
		TICAL FLIGH	T	F	REDUN	DANCY	SCF	REENS	CIL ITEM
	H	IDW/FU	NC	A	<b>L</b>	E	3	С	
NASA IOA	]	1 /1 1 /1	]	[ F	, ]	[ ] [	]	[ P ] [ ]	[ X ] * [ X ]
COMPARE	[	/	]	[ N	]	[ N	]	[ N ]	[ ]
RECOMMEN	DAT	ions:	(]	f dif	fere	nt fr	om N	ASA)	
	[	/	]	[	]	[	]	[ ]	[ ] (ADD/DELETE)
* CIL RE	TEN	TION 1	RATIC	NALE:	(If	appl	icab	le) ADEQUA INADEQUA	
REMARKS .								3011	L j

**REMARKS:** 

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4502	MS-4502 NEW 05-6ID-2036-2									
SUBSYSTEM: MDAC ID: ITEM:	4502	WITCH, S21									
LEAD ANALYST:	ROBINSON	4									
ASSESSMENT:											
CRITICAL	YTI	REDUNDA	NCY SCREE	ns	CIL ITEM						
FLIGH HDW/FU		A	В	С							
NASA [ 3 /1F IOA [ 2 /1F	R ] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ x ] *						
COMPARE [ N /	] [	]	[ ]	[ ]	[ N ]						
RECOMMENDATIONS	: (If d	lifferen	t from NAS	SA)							
( /	] [	]	[ ]		[ ] ADD/DELETE)						
* CIL RETENTION REMARKS:	RATIONAL	LE: (If	applicabl	e) ADEQUATE INADEQUATE							

THE SWITCH IS NOT NORMALLY ENERGIZED UNLESS IT IS READY TO BE USED. CIRCUIT BREAKERS AHEAD OF THE SWITCH IN THE CIRCUIT ARE NOT CLOSED WHEN THE RMS IS NOT IN USE, THEREFORE, IOA CONCURS THAT A FAILED CLOSED CONDITION FOR THIS SWITCH WOULD NOW WARRANT A 2/1R CRIT AND RECOMMENDS DOWNGRADING THE IOA CRIT TO 3/1R.

ASSESSM ASSESSM NASA FM	ENT	C I	D:	RMS	l2/88 5-4503 -6ID-2	! !031-	-1			NASA D BASEL		[ X	]
SUBSYST MDAC ID ITEM:				450	S/EPD& 3 TCH,							. <b></b>	J
LEAD AN	ALY	ST	:	ROE	INSON								
ASSESSMI	ENT	:											
	CR		ICA LIG	LITY HT	:	REDU	NDANC	Y SCI	REENS		_	IL	
	]	HDV	V/F	UNC	i	A	Ì	В		С	I	TEM	
NASA IOA	[ [	1	/1 /1	]	[	]	]	]	[	]	]	X X	] * 1
COMPARE	[		/	]	[	]	[	]	ſ	]	[	]	=
RECOMMEN	DAT	PIO	NS:	: (1	[f dif	fere	ent fr	om N	ASA)				
	[		/	]	[	J	C	]	[	-	[ (ADD/	] DEI	ETE:
* CIL RE	TEN	TI	ON	RATIC	NALE:	(If	appl	icab					
REMARKS:									INA	DEQUATI DEQUATI	] E	]	

RMS-4504	L-2		[ X ]
RMS/EPD&C 4504 SWITCH, S28	3		
ROBINSON			
	DUNDANCY SCI	REENS	CIL ITEM
	В	С	
[ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
] [	] [ ]	[ ]	[ N ]
(If diffe	erent from 1	NASA)	
] [	] [ ]	[ ] A)	[ ] DD/DELETE)
RATIONALE:	(If applica	ble) ADEQUATE INADEQUATE	[ ]
	RMS/EPD&C 4504 SWITCH, S28 ROBINSON  LITY REI HT UNC A  R ] [ P R ] [ P ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [	RMS-4504 05-6ID-2031-2  RMS/EPD&C 4504 SWITCH, S28  ROBINSON  LITY REDUNDANCY SCI  A B  R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ] R ] [ P ] [ P ]	RMS-4504 05-6ID-2031-2  RMS/EPD&C 4504 SWITCH, S28  ROBINSON  LITY REDUNDANCY SCREENS  RT UNC A B C  R ] [P] [P] [P] R ] [P] [P] RATIONALE: (If applicable) ADEQUATE

#### REMARKS:

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	SSMENT DATE: 7/17/87 SSMENT ID: RMS-4505 FMEA #: 05-6ID-2032-1											ASA DA BASELI N		[	x	]	
SUBSYSTE MDAC ID:			RMS/1 4505 SWIT			25											
LEAD ANA	LYSI	r:	ROBI	NSON	1												
ASSESSME	ENT:																
	F	rical FLIGH DW/FU	T		RE A	DUI	NDAN	CY B	SCR	EEN	s c				IL TEM	ſ	
NASA IOA	[ ]	1 /1	]	[	P	]	]	P	]	]	P	]		]	x x	]	*
COMPARE	£	/	]	ſ	N	]	[	N	]	[	N	]		[		]	
RECOMMEN	DATI	ons:	(II	f di	ff	ere	ent :	fro	om N	ASA)	)						
	[	/	]	[		]	[		]	[			(AD		'DE		TE
* CIL RE	TENT	I NOI	RATION	IALE	:	(If	apı	pli	.cab	-		EQUATI		] [		]	

**REMARKS:** 

ASSESSMEN ASSESSMEN NASA FMEA	T	ID	:	RMS	7/17/87 NASA DATA: RMS-4506 BASELINE 05-6ID-2032-2 NEW									[	X :	]	
SUBSYSTEM MDAC ID:	1:			450	RMS/EPD&C 1506 SWITCH, S25												
LEAD ANA	LYS	T:		RO	BINS	ON	Ī										
ASSESSME	T.																
•	CRI		[CAL]				RE	DUND	AN	CY	SCREI	ENS	3			IL IEM	
	F		LIGHT N/FUI		<b>5</b>												
NASA IOA	[	3 2	/1R /1R	]		]	P P	]	]	P P	]	[	P P	]	[	x	] <b>*</b>
COMPARE	[	N	/	]		[		1	[		]	[		]	[	N	]
RECOMMEN	iDA'	TI	ons:		(If	d	if	ferer	nt	fr	om NA	SA	)				
	[		/	]		[		]	(		3	[		] (	ADD	/DI	] ELETE)
* CIL RI	ETE	NT	NOI	RA!	гіои	AL	E:	(If	aŗ	ppl	icabl			DEQUATE DEQUATE			]
REMARKS	:																

THE SWITCH IS NOT NORMALLY ENERGIZED UNLESS IT IS READY TO BE USED. CIRCUIT BREAKERS AHEAD OF THE SWITCH IN THE CIRCUIT ARE NOT CLOSED WHEN THE RMS IS NOT IN USE, THEREFORE, IOA CONCURS THAT A FAILED CLOSED CONDITION FOR THIS SWITCH WOULD NOW WARRANT A 2/1R CRIT AND RECOMMENDS DOWNGRADING THE IOA CRIT TO 3/1R.

ASSESSMI ASSESSMI NASA FMI	ENT	'I	D:	RMS-	2/88 -4507 6ID-20	27-	1		SA DATA: ASELINE [ ] NEW [ X ]						
SUBSYSTI MDAC ID ITEM:				450	/EPD&C 7 ГСН, S										
LEAD AND	ALY	ST	:	ROB	INSON										
ASSESSMI	ENT	:													
	CR		ICA: LIGI	LITY HT	R	EDU	NDANC	SCI	REENS			CI			
	:	HDI	W/F	JNC	A		F	3	C	ITEM					
NASA IOA	]	1	/1 /1	]	[	]	]	]	[	]		[	X X	]	*
COMPARE	[		/	]	Ţ	]	ſ	]	[	]		[		]	
RECOMMEN	DA:	ric	ONS:	(1	f dif	fere	ent fr	om N	(ASA)						
	[		/	]	[	]	[	]	[	]	(AI	[ )D/			TE)
* CIL RE	TEN	TI	ON	RATIO	NALE:	(If	appl	icab	A	DEQU		[		]	
REMARKS:									INA	DEQU	ATE	Ì		]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4508 05-6ID-2		·-2				ASA DATI BASELINI NE	E	[ [ X	]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4508 SWITCH,		2							
LEAD ANALYST:	ROBINSO	N								
ASSESSMENT:										
CRITICAL		REI	DUNDANG	CY	SCREE	NS			CIL	1
FLIGH HDW/FU		A		В		c	:			-
NASA [ 2 /1R IOA [ 2 /1R	] [	P P	] [	F P	]	[ E	? ] ? ]		[ X	] <b>*</b>
COMPARE [ /	] [		] [	N	]	[	]		[	)
RECOMMENDATIONS:	(If d	liff	erent	fro	om NAS	A)				
[ /	] [	•	] [		1 .	[	3	(Al	[ DD/D	] ELETE
* CIL RETENTION	RATIONAL	E:	(If ap	pl:	icable		ADEQUAT ADEQUAT		[	]
REMARKS: RECOMMEND CHANG	ING IOA F	REDU	INDANCY	S	CREEN	В	TO FAIL	•		

ASSESSMI ASSESSMI NASA FMI	ENT	ID:	RMS-	7/87 -4509 SID-20	33-1				ASA DATA BASELINE NEW	[ X	; ] ]
SUBSYSTE MDAC ID:			4509	'EPD&C ) ICH, S							
LEAD ANA	LYS	T:	ROBI	NSON							
ASSESSME	ENT:										
		TICAL FLIGH	T		EDUN	DANCY	SCR			CIL	
	Н	DW/FU	NC	A		В		С			
NASA IOA	[	1 /1 1 /1	]	[ P [	]	[ P	]	[ P	]	[ X ]	] <b>*</b>
COMPARE	[	/	]	[ N	]	[ N	]	[ ]	]	[	]
RECOMMEN	DAT	ions:	(I	f diff	fere	nt fro	om N	ASA)			
	[	/	]	[	1	. [	]	(	] (A)	[ DD/DI	] ELETE)
* CIL RE	TEN'	TION :	RATIO	NALE:	(If	appli	cab:	AD:	EQUATE EQUATE	[	]

**REMARKS:** 

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4510	1		NASA DATA: BASELINE NEW	[ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4510 SWITCH,				
LEAD ANALYST:	ROBINSON	Ŋ			
ASSESSMENT:					
CRITICAL FLIGH	ns	CIL ITEM			
HDW/FU		A	В	С	
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ x ] *
COMPARE [ N /	] [	]	[ ]	[ ]	[ N ]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
[ /	] [	]	[ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	≘) ADEQUATE INADEQUATE	[ ]
REMARKS: RECOMMEND DOWNGR THE SWITCH IS NO USED. CIRCUIT E NOT CLOSED WHEN THAT A FAILED CI A 2/1R CRIT.	T NORMAL REAKERS	LY ENERGATE OF THE NOTE OF THE	GIZED UNL F THE SWI' IN USE. T	ESS IT IS RE ICH IN THE C HEREFORE, IO	A CONCURS

ASSESSME ASSESSME NASA FME	ENT	ID:	RMS-4	511	28-1			]	NASA DATI BASELINI NEV					
SUBSYSTE MDAC ID:			RMS/E 4511 SWITC											
LEAD ANA	LYS	ST:	ROBIN	SON										
ASSESSME	ENT:	:												
	CRI	TICAL		R	EDUNI	DANCY	SCRI	EENS		CIL				
	Н	IDW/FU		A		F	3	(		TTE	ITEM			
NASA IOA	[ [	1 /1 1 /1	]	[	]	[ [	] ]	[	]	[ X [ X	( ) *			
COMPARE	[	/	]	[	]	[	]	[	]	[	]			
RECOMMEN	DAT	cions:	(If	dif	fere	nt fr	om N2	ASA)						
	[	/	]	[	]	[	]	[		[ ADD/D	] ELETE)			
* CIL RE		TION	RATION	ALE:	(If	appl	.icab]		ADEQUATE ADEQUATE		]			
REMARKS:														

NONE

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	KM5-40	8 12 -2028-2		NASA DATA BASELINE NEW	1 [ X ] 2 [ ]				
SUBSYSTEM: MDAC ID: ITEM:	RMS/EF 4512 SWITCH	PD&C	·						
LEAD ANALYST:	ROBINS	ON							
ASSESSMENT:									
CRITIC		REDUND	ANCY SCRE	ENS	CIL ITEM				
FLI HDW/									
NASA [ 2 / IOA [ 2 /	IR ] IR ]	INC A B [P] [F] [P]							
COMPARE [ /	]	[ ]	[ N ]	[ ]	[ ]				
RECOMMENDATION	s: (If	differer	nt from N	ASA)					
. [ /	]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)				
* CIL RETENTI	N RATION	NALE: (If	applicab	le) ADEQUATI INADEQUATI	E [ ]				
REMARKS: RECOMMEND CHA	IGING IO	A REDUNDA	NCY SCREE	N B TO FAIL	•				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4513	34-1		NASA DATA BASELINE NEW	E [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4513 SWITCH, S				· ·
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL FLIGH		EDUNDANCY	SCREEN	S	CIL
HDW/FU	NC A	В		С	ITEM
NASA [ 1 /1 IOA [ 1 /1	] [ P	] [ P	] [	P ]	[ X ] * [ X ]
COMPARE [ /	] [ N	] [ N	] [	n j	[ ]
RECOMMENDATIONS:	(If diff	erent fro	om NASA)		
[ /	-	] [		=	[ ] DD/DELETE)
* CIL RETENTION I	RATIONALE:	(If appli			
REMARKS:				ADEQUATE ADEQUATE	[ ]

ASSESSMENT DATE: 7/17/87

NASA DATA:

ASSESSME NASA FME					-6ID-		34-2					1	NEW			]	
SUBSYSTE MDAC ID: ITEM:				451	RMS/EPD&C 4514 SWITCH, S23 ROBINSON												
LEAD ANA	LY	ST:	<b>:</b>	ROE	BINSO	N											
ASSESSME	ENT	:															
	CR		[CAL]			R	EDUN	DANC	CY	sc	REEN	3		CI II	L EM	[	
	]		/FUN	_		A			В			С					
NASA IOA	[	3 2	/1R /1R	]	[	P P	]	]	P P	]	[	P P	] ]	[ [	x	]	*
COMPARE	[	N	/	]	[		)	[		]	[		]	[	N	]	
RECOMMEN	ADA'	TIC	ons:		(If d	lif	fere	nt i	fro	om	NASA	)					
	[		/	]	(		]	(		]	[		] (A	DD,			ETE)
* CIL RI	ETE	NT	ION 1	RAT:	IONAI	E:	(If	apı	pl:	ica		A NA	DEQUATE DEQUATE	[		]	
REMARKS	:																

THE SWITCH IS NOT NORMALLY ENERGIZED UNLESS IT IS READY TO BE USED. CIRCUIT BREAKERS AHEAD OF THE SWITCH IN THE CIRCUIT ARE NOT CLOSED WHEN THE RMS IS NOT IN USE, THEREFORE, IOA CONCURS THAT A FAILED CLOSED CONDITION FOR THIS SWITCH WOULD NOW WARRANT A 2/1R CRIT AND RECOMMENDS DOWNGRADING THE IOA CRIT TO 3/1R.

ASSESSME ASSESSME NASA FME	1/1 RMS 05-	l		N		DATA ELINE NEW	[	x	]						
SUBSYSTE MDAC ID:				451	S/EPD&C L5 TCH, Si	30									
LEAD ANA	ALYS	ST:	;	ROE	BINSON										
ASSESSME	ENT	:													
	CR			LITY	RI	EDUI	NDANCY	SCR	REENS				IL PEM	g.	
	I		LIGH V/FU		A	в с					LER	ı			
NASA IOA	[	1	/1 /1	]	[	]	]	]	]	]		[	X X	]	*
COMPARE	[		/	]	[	]	]	]	(	]		[		]	
RECOMMEN	NDA:	ΓΙC	ons:	: (	(If dif:	fer	ent fr	om N	IASA)						
	[		/	]	[	]	[	]	[	]	(A	DD,	/DF	] ELF	ETE
* CIL RE		T	ION	RATI	ONALE:	(I:	f appl	icak	1		JATE JATE	[		]	

ASSESSMEN ASSESSMEN NASA FMEA	T	ID		RMS	MS-4516 5-6ID-2029-2 MS/EPD&C									ì			DAT LIN NE	ΙE			]	
SUBSYSTEM MDAC ID: ITEM:	í:			45				0														
LEAD ANAI	ZYS	T:		RO	BINS	ON	Ī															
ASSESSME	1T:	:																				
(	CRI		CAL				RE	וטם:	NDA	NC	Y	SC	REE	NS					CI II	EM	1	
	I		LIGH //FU				A				В				С							
NASA IOA	[	2 2	/1R	2 ]		[	P P	]		]	F P	]		]	P P	]			]	X X	]	*
COMPARE	[		/	]		[		)		[	N	3		[		]			[		]	
RECOMMEN	DΑ	TI	ons:	:	(If	d	if	fer	ent	:	fr	om	NAS	A)	)							
	[		/	]		[		]		[		]		[		]		(A	DD.	/D	ELI	ETE)
* CIL RE	ETE	TN	ION	RA'	TION.	ΑI	E:	(I	f a	аp	pl	ica	able				UAU L'AU				]	
REMARKS:	1D	CH	IANG	ING	IOA	F	₹EC	UNI	OAN	CY	S	CR	EEN	В	T	O F	AI	L.				

ASSESSM ASSESSM NASA FM	ENT	ID:	RMS	7/87 -4517 6ID-20	)35-1	-		NASA BASE	DATA LINE NEW	[ ]	х ј ]
SUBSYSTI MDAC ID ITEM:			451	/EPD&0 7 FCH, S							
LEAD AND	ALYS	T:	ROB	INSON							
ASSESSMI	ENT:										
		TICAL FLIGH	r			DANC	Y SCF	REENS		CII	-
	H	DW/FU	NC	A		]	В	С			
NASA IOA	[ ]	1 /1 1 /1	]	[ P	]	[ ]	P ]	[ P ] [ ]		x ] x ]	* [ ]
COMPARE	[	/	]	[ N	]	[ ]	1 ]	[ N ]		[	]
RECOMMEN	DAT	ions:	(I	fdif	fere	nt fi	om N	ASA)			
	[	/	]	[	]	[	)	[ ]	(AI	[ DD/D	] ELETE)
* CIL RE	TENI	TION F	OITAS	NALE:	(If	appl	icab	le)			
REMARKS:								ADEQUA INADEQUA		[	]

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	7/17/87 RMS-4518 05-6ID-2			NASA DATA: BASELINE NEW	[ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4518 SWITCH,				
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL		REDUNDA	ANCY SCREI	ens	CIL ITEM
FLIGH HDW/FU		A	В	С	
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] * [ x ]
COMPARE [ N /		]	[ ]	[ ]	[ N ]
RECOMMENDATIONS:	(If d	ifferen	t from NA	SA)	
[ /	] [	]	[ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	
REMARKS:					
THE SWITCH IS NO	T NORMAL	LY ENER	GIZED UNL	ESS IT IS RE	ADY TO BE

USED. CIRCUIT BREAKERS AHEAD OF THE SWITCH IN THE CIRCUIT ARE NOT CLOSED WHEN THE RMS IS NOT IN USE, THEREFORE, IOA CONCURS THAT A FAILED CLOSED CONDITION FOR THIS SWITCH WOULD NOW WARRANT A 2/1R CRIT AND RECOMMENDS DOWNGRADING THE IOA CRIT TO 3/1R.

ASSESSMI ASSESSMI NASA FMI SUBSYSTI MDAC ID:	ENT EA EM:	I	D:	RMS-	-4519 6ID-20 /EPD&C		1		1	IASA BASE		[	x	]	
ITEM:				SWI	TCH, S	29									
LEAD ANA	ALY	ST	:	ROB	INSON										
ASSESSME	ENT	:													
	CR			ITY T	R	EDUI	NDANCY	SCR	REENS				L CEN		
	1	FLIGHT HDW/FUNC A					В		C	:	Т.	. er	1		
NASA IOA	[	1	/1 /1	]	[	]	[ [	]	[	]		[	X X	]	*
COMPARE	[		/	)	[	]	[	]	[	3		[		]	
RECOMMEN	IDA:	ri	ons:	(:	If dif	fere	ent fr	om N	IASA)						
	[		/	]	[	]	[	]	(	].	(A	[ DD/	'DF	] ELF	ETE)
* CIL RE	ETEI	NT:	ION	RATIO	ONALE:	(I1	f appl	icab	A	DEQU.		[		]	
REMARKS:	:									.DLQU		L		1	

ASSESSMEN ASSESSMEN NASA FMEA	T :	ID		RMS	2/88 -452 -6ID-	20	03	0-2				]		SA DAT ASELIN NI			<b>K</b> ]	 	
SUBSYSTEM MDAC ID: ITEM:	l:			452	S/EP 20 ITCH			9											
LEAD ANAI	LYS	T:		RO	BINS	ON													
ASSESSMEN	1T:																_		
(	CRI			ΙΤΥ			RE	DUND	ANC	CY	SCRE	ENS	}			CI	EM	,	
	F		.IGH I/FU				A			В			С						
NASA IOA	[	2 2	/1R /1F	: ] : ]		[	P P	]	[	F P	]	[	P P	]		[	X X	]	*
COMPARE	[		/	]	•	[		]	[	N	3	Ĺ		3		[		]	
RECOMMEN	DA'	TĮ(	SNC:	:	(If	d	if	ferer	nt	fr	om NA	ASA	)						
	[		/	]		[		)	[		]	[		]	(A	DD.	/ DI	ELF ]	ETE)
* CIL RE	ETE	ΝT	ION	RA!	rion.	ΑL	E:	(If	ap	pl	icab			DEQUA DEQUA		[		]	
REMARKS:	:																		

ASSESSMENT DAY ASSESSMENT ID NASA FMEA #:			1	NASA DA BASEL			]				
SUBSYSTEM: MDAC ID: ITEM:	RMS/E 4521 SWITC										
LEAD ANALYST:	ROBIN	SON									
ASSESSMENT:											
	ALITY GHT	R	EDUN	DANCY	SCR	EENS			IL		
	FUNC	A	•	E	3	c	2	I.	TEI	M	
NASA [ 1 / IOA [ 3 /	1 ] 3 ]	]	]	]	]	[	]	[	X	]	*
COMPARE [ N /	N ]	[	]	[	]	[	]	E	N	]	
RECOMMENDATION	S: (If	dif	ferei	nt fr	om N.	ASA)					
[ /	]	[	]	[	]	[	]	[ (ADD/	'DE	] :LE	TE)
* CIL RETENTION	N RATION	ALE:	(If	appl	icab						
REMARKS:						INA	DEQUAT:	E [		] ]	
NO ISSUE. IOA RECOMMEND UPGRA	CONCURS ADING 102	WITH A CRI	H NAS	A AN	ALYS] AND	S, ADDII	NG TO (	CIL.			

110000	7/17/87 RMS-4522 05-6ID-2026-2	NASA DATA: BASELINE NEW	[ X ]	]
·	RMS/EPD&C 4522 SWITCH, S33			
LEAD ANALYST:	ROBINSON			
ASSESSMENT:				
CRITICAL		5	CIL ITEM	
FLIGHT HDW/FU	_	C		
NASA [ 3 /2R IOA [ 3 /2R	] [ NA] [ NA] [ ] [ P ] [ P ] [	NA] P]	[	] <b>*</b>
COMPARE [ /	] [N] [N] [	и ]	[	3
RECOMMENDATIONS:	(If different from NASA)			
[ /	] [ ] [ ] [	] (Ai	[ OD/DE	] LETE)
* CIL RETENTION	RATIONALE: (If applicable)	ADEQUATE NADEQUATE	[	].

NONE

ASSESSME	SSESSMENT DATE: 2/14/88 SSESSMENT ID: RMS-4523 ASA FMEA #: 05-6ID-2001-1							NASA I BASEI		[ X	]
SUBSYSTE MDAC ID:		RMS/EP 4523 FUSE,									
LEAD ANA	LYST:	ROBINS	ON				•				
ASSESSME	NT:										
	CRITICAI FLIGH HDW/FU	T	RE A	EDUNDAN	NCY B	SCRE	ens	c		CIL	
NASA IOA	. ,	]	[ NA	\] [	NA [	]	[	NA]		[	] *
COMPARE	[ /	]	[ ]	] [	[ N	]	[	и ]		[	]
RECOMMEN	DATIONS:	(If	diff	erent	fro	om NAS	SA)				
	[ . /	]	[	] [	[	]	[	]	(Al	[ [D/DD	] ELETE
* CIL RE	TENTION	RATIONA	LE:	(If ap	pli	.cable		ADEQU <i>I</i> IADEQU <i>I</i>	ATE ATE	[	]
IOA FMEA	HAS TYP	O IN "I	TEM"	. SHO	DULE	BE '	<b>'</b> F3	7" NOT	"F2	27".	

ASSESSMENT	FMEA #: 05-6ID-2003-1								SA DAT ASELIN NE		x ]	
SUBSYSTEM: MDAC ID: ITEM:			RMS/E 4524 CIRCU		REAKER	, CE	327					
LEAD ANALY	ST:		ROBIN	SON								
ASSESSMENT	:											
CR			ITY	R	EDUNDA	MCY	SCREE	NS		CI IT	L EM	
		IGH'  /FU		A		В		С				
NASA [	2 2	/1R /1R	]	[ P	]	[ P	]	[ P	]	[	x ] * x ]	!
COMPARE (	[	/	]	[	]	[	]	[	]	[	]	
RECOMMENDA	ATIC	ons:	(II	f dif	feren	t fr	om NAS	5A)				
	(	/	1	[	]	[	]	[	1		] /DELE?	ſE)
* CIL RET	ENT:	ION	RATIO	NALE:	(If	appl	icabl	-	DEQUAT DEQUAT		]	
REMARKS: COMBINE C COMPONENT	OMP	ONEN	ITS IN	IOA	FMEAs	452	4 AND	452	8 TO A	GREE	WITH	BASE

ASSESSM ASSESSM NASA FM	ENT ENT EA #	ID:	re:	2/1 RMS 05-	4/88 -452 6ID-	5 20	03-2								DATA ELINI NEV	E [	х <u>ј</u>		
SUBSYST	LM:			RMS 452	/EPD 5	&C	REAK			B27									
LEAD AN	ALYS	T:		ROB	INSO	N													
ASSESSMI	ENT:																		
		FLI	[GH]			R	EDUNI	DAN	CY	SCI	REE	NS	3				IL TEM		
	Н	DW/	'FUN	1C		A			В				С			_			
NASA IOA	[	3 / 3 /	'3 '3	]	[	P	]	[	P	]		]	P	]		[	]	*	
COMPARE	[	/	,	]	[	N	]	[	N	]		[	N	]		[	]		
RECOMMEN	IDAT	ION	is:	(1	f d	if	ferer	it 1	fro	om N	IAS.	A)							
	[	/	,	]	[		J	[		]		[		]	(A		] /DEL	ETE)	
* CIL RE	ETEN'	TIO	N R	ATIC	NALI	Ξ:	(If	apr	li	.cab		-			ATE		]		
REMARKS:		D014	***												ATE	_	j		
COMBINE BASE COM	(PON	ent	ENT S.	'S IN	102	A F	MEAs	45	25	AN	ID 4	45	29	TO	AGR	EE	WITH	I NASA	L

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4526	02-1		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4526 CIRCUIT B		CB29		
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL		EDUNDANC	Y SCREEN	IS	CIL ITEM
FLIGH HDW/FU		<b>L</b>	В	С	
NASA [ 1 /1 IOA [ 2 /1R	] [ ] [ I	] [	] [ P ]	] [ P ]	[ X ] *
COMPARE [ N /N	j [ 1	1][	n ]	[и]	[ ]
RECOMMENDATIONS:	(If di	fferent	from NAS	A)	·
[ /	] [	] [	1	[ ] (A	[ ] .DD/DELETE)
* CIL RETENTION	RATIONALE	: (If ap)		) ADEQUATE INADEQUATE	[ ]
REMARKS: NO ISSUE. IOA ( IOA RECOMMENDS ( FAILURE MODE FO)	CONCURS WI JPGRADING R THIS COM	THE IOA	ASA ANAL FMEA CRI	YSIS. TICALITY AN	ID ADDING THIS

ASSESSMI ASSESSMI NASA FMI	ENT 1	D:	RMS-4		002-2				NASA BASI	DATA ELINE NEW	[ ]	( ) ]	
SUBSYSTIMDAC ID			RMS/E 4527 CIRCU	PD&	C								
LEAD AND	ALYSI	<b>:</b> :	ROBIN	SON									
ASSESSMI	ENT:												
	F	'ICAL 'LIGH	T	F	REDUNI	DANCY	SCRE	ENS			CIL		
	HD	W/FU	NC	P	<b>L</b>	В			С				
NASA IOA	[ 3 [ 3	/3 /3	]	[ [	<b>'</b> ]	[ P	]	[	P ]		[	] *	•
COMPARE	[	/	]	[ N	]	[ N	]	[	и ј		[	]	
RECOMMEN	<b>IDATI</b>	ons:	(If	dif	ferer	nt fr	om NA	SA)					
	ſ	/	]	[	]	[	]	[	]	(AI	[ DD/D:	) ELET	E)
* CIL RE	TENT	ION I	RATION	ALE:	(If	appl	icabl		ADEQU.	ATE	ſ	1	
REMARKS:								IN	ADEQU	ATE	•	j	
COMBINE BASE COM	COMPO PONEI	ONENT	S IN 1	OA	FMEAs	4527	AND	453	31 TO	AGRE	E W	ITH	NASA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4528	003-1		NASA DATA: BASELINE NEW	[ X ]
	RMS/EPD&C 4528 CIRCUIT I		CB33		
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL	<del>-</del>	REDUNDAN	CY SCREE	NS	CIL ITEM
FLIGH HDW/FU		A	В	С	
NASA [ 2 /1R IOA [ 2 /1R	] [ ]	P ] [ P ] [	P ] P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	) [	]	[ ]	[ ]
RECOMMENDATIONS:	(If di	fferent	from NAS	A)	
[ /	] [	) [	]	[ ] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If ap		e) ADEQUATE INADEQUATE	
REMARKS: COMBINE COMPONEN COMPONENTS.	TS IN IOA	FMEAs 4	1524 AND	4528 TO AGR	EE WITH BASE

ASSESSMENT DE ASSESSMENT II NASA FMEA #:	ATE: 2/14/8 D: RMS-48 05-61	88 529 D-2003-2		NASA DATA BASELINI NEV	E [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/E1 4529				
LEAD ANALYST	: ROBINS	SON			
ASSESSMENT:					
FI	ICALITY LIGHT W/FUNC	REDUND	ANCY SCRE	ENS C	CIL ITEM
11.04	N/ FONC	A	В	C	
NASA [ 3 IOA [ 3	/3 ] /3 ]	[ P ] [ ]	[ P ] [ ]	[ P ] [ ]	[ ] *
COMPARE [	/ 1	[ N ]	[ N ]	[ N ]	[ ]
RECOMMENDATIO	ONS: (If	differen	t from NA	SA)	
[	/ 1	[ ]	[ ]		[ ] ADD/DELETE)
* CIL RETENTI	TON RATTONA	ALE: (Tf	annlicable	a.)	
REMARKS:		TEL. (II		ADEQUATE INADEQUATE	[ ]
COMBINE COMPO BASE COMPONEN	ONENTS IN I	OA FMEAs	4525 AND	4529 TO AGR	EE WITH NASA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/14/88 RMS-4530 05-6ID-2			NASA DATA: BASELINE NEW	[ x ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4530 CIRCUIT	C BREAKER,	CB32		
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICAL		REDUNDAN	CY SCREE	ns	CIL ITEM
FLIGH HDW/FU		A	В	С	
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] [ P ] [	F ] P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [	] [	и ]	[ ]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
[ /	] [	] [	]	[ ] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If ar	pplicable	adequate	
REMARKS: COMBINE COMPONENTS. CORRECT IOA SCRI		A FMEAS 4	4526 AND	4530 TO AGR	EE WITH BASE

ASSESSMENT ASSESSMENT NASA FMEA #	DATE: ID:	2/14/88 RMS-453: 05-6ID-	1 2002 <b>-</b> 2				ASA DA BASELI N		X ] ]	
SUBSYSTEM: MDAC ID: ITEM:		RMS/EPD 4531 CIRCUIT	&C							
LEAD ANALYS	T:	ROBINSON	1							
ASSESSMENT:										
	TICALI FLIGHT		REDUNDA	NCA	SCRE	ENS		CI		
	DW/FUN	•	A	E	}	С		IT	EM	
NASA [ IOA [	3 /3 3 /3	] [	P ]	[ F	. ]	[ P	]	[ [	] ;	<b>k</b>
COMPARE [	/	] [	N ]	[ N	]	[ N	]	[	]	
RECOMMENDAT	ions:	(If di	fferent	fr	om NA	SA)				
[	/	] [	]	[	]	[		[ (ADD/I		E)
* CIL RETEN	TION R	ATIONALE	: (If a	ppl	icable					
REMARKS:							EQUAT:		]	
COMBINE COMPONI	PONENT	S IN IOA	FMEAs	452	7 AND	4531	. TO A	GREE W	ITH	NASA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4532	: :507-1		NASA DATA: BASELINE [ ] NEW [ X ]					
MDAC ID:	RMS/EPD8 4532 PIC 1	iC							
LEAD ANALYST:	ROBINSON	ī							
ASSESSMENT:									
CRITICAL		REDUND	ANCY SCRE	ENS	CIL ITEM				
FLIGH HDW/FU		A	В	С					
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]				
COMPARE [ /	] [	]	[ N ]	[ ]	[ ]				
RECOMMENDATIONS:	(If d	ifferen	t from NA	ASA)					
[ /	] [	]	[ ]	[ ]	[ ] ADD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If	applicabl	le) ADEQUATE INADEQUATE	[ ]				
REMARKS: IOA CONCURS. FAI RECOMMEND CHANGE RECOMMEND COMBIN	TOA RED	UNDANCY	SCREEN	NDANCY SCREED B TO "F".	N B.				

	: 7/17/87 RMS-453 05-6ID-	33		NASA DATA BASELINE NEW	E [ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPI 4533 PIC 1	O&C			
LEAD ANALYST:	ROBINSO	М			
ASSESSMENT:					
CRITICA FLIG		REDUNDA	ANCY SCRE	ENS	CIL ITEM
	UNC	A	В	С	IIEM
NASA [ 2 /1 IOA [ 2 /1	R ] [	P ]	[ NA] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	]	[ N ]	[ ]	[ ]
RECOMMENDATIONS	(If d	lifferent	from NA	SA)	
[ /	] [	]	[ ]	[ ] (A)	[ ] .DD/DELETE)
* CIL RETENTION	RATIONAL	Æ: (If a	pplicabl	•	
				ADEQUATE INADEQUATE	[ ]
REMARKS: FAILURE DOES NO AND NASA BASELII RECOMMEND COMBI	NE REDUND	ANCY SCR	REEN B TO	B. RECOMMEN	D CHANGE IOA
THE COMPT	THO TON	THENS IC	M SEADS	TIU NADA LWE	A.

ASSESSMEN ASSESSMEN NASA FMEA	T	ID	:	RMS-4	12/88 NASA DATA: S-4534 BASELINE [ ] -6ID-2507-1 NEW [ X ]															
SUBSYSTEM MDAC ID:	<b>:</b>			RMS/E 4534 PIC 1		С														
LEAD ANAI	LYS	T:		ROBIN	SON	Ī														
ASSESSMEN	ıT:																			
C	CRI			TTY.		RI	EDUN	IDAI	NC	Y:	sc	REE	NS	}				EL PEM	1	
	F	_	LIGH: V/FUI			A				В				С						
NASA IOA	[	2 2	/1R /1R	]	[	P P	]		[	F P	]		] [	P P	]		[ [	X X	]	*
COMPARE	[		/	]	[		]		[	N	]		[		1		[		1	
RECOMMEN	DA'	ΓI	ons:	(I:	f d	if	fer	ent	1	fro	mc	NAS	A)	)						
			/												]	(A		/D		ETE)
* CIL RE	TE:	NΤ	ION	RATIO	NAL	E:	(I	fa	p	pΊ	ica	able			DEQUAT DEQUAT				]	
REMARKS: IOA CONC RECOMMEN RECOMMEN	UR	~**	A STATE	, TA	רושם	TIN	ΠΔΝ	יי	-	ĽK	P. P. I	N D		v	· r •					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	7/17/87 RMS-4535 05-6ID-2515-1	MS-4535 BASELINE 5-6ID-2515-1 NEW							
SUBSYSTEM:	RMS/EPD&C 4535 PIC 12								
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
CRITICALI FLIGHT		CY SCREENS	CIL ITEM						
HDW/FUN	IC A	В С	TIEM						
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ ] [ P ]	NA] [ P ] P ] [ P ]	[ X ] * [ X ]						
COMPARE [ /	] [ ] [	иј [ ]	[ ]						
RECOMMENDATIONS:	(If different	from NASA)							
[ /	] [ ] [		[ ] DD/DELETE)						
* CIL RETENTION R	ATIONALE: (If ap	plicable)							
		ADEQUATE INADEQUATE	[ ]						
AND NASA BASELINE	REDUNDANCY SCRE	SCREEN B. RECOMMENT	CHANGE IOA						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4536 05-6ID-25	/15/88 NASA DATA: MS-4536 BASELINE [ X ] 5-6ID-2507-2 NEW [ ]								
SUBSYSTEM: MDAC ID:	RMS/EPD&C 4536 PIC 1, 12	S								
LEAD ANALYST:	ROBINSON									
ASSESSMENT:										
	ITY I	REDUNDANC	Y SCREENS	5	CIL ITEM					
FLIGH HDW/FU	NC 1	A	В	С						
NASA [ 3 /1R IOA [ 2 /1R	] [ ]	P ] [ P ] [	P ] [ P ] [	P ] P ]	[ x ] *					
COMPARE [ N /	] [	] [	] [	1	[ N ]					
RECOMMENDATIONS:	(If di	fferent f	rom NASA)	)						
[ /	] [	] [	] [	P ] (Al	[ ] DD/DELETE)					
* CIL RETENTION	RATIONALE	: (If app	olicable) Il	ADEQUATE NADEQUATE	[ ]					
REMARKS: NO ISSUE. AFTER IOA CRIT TO 3/1R NOMINALLY FOR A 1", AND A "FIRE IOA RECOMMENDS OF	AND DELE PIC TO AR 2" ARE RE	TING THIS M AND FIL OUIRED.	FMEA FRORE PREMATO	URELY, AN	"ARM", "FIRE					

4561.

ASSESSME ASSESSME NASA FME	NT : NT : A #	DATE: ID: :	2/15 RMS-	5/88 -453 5ID-	7 251	.5-2						DATA ELINI NEV	] 3	x	]	
SUBSYSTE MDAC ID: ITEM:	M:		RMS/	/EPD	&C											
LEAD ANA	LYS	r:	ROBI	INSO	N											
ASSESSME	NT:															
						DUNDAI	ICY	sci	REENS	3			C:	IL FEN		
	HI	OW/FU	NC		A		В			С			Δ.	. 151	•	
NASA IOA	[ 3	3 /1F 2 /1F	· ]	[ [	P P	] [	P	]	[	P P	]		[	X X	]	*
COMPARE	[ ]	1 \	]	]		] [		]	[		]		[		]	
RECOMMEN	DATI	ons:	(I	f di	lff	erent	fro	om 1	NASA)							
	[	/	]	[		] [		]	[	P	)		[ DD/			TE)
* CIL RE	<b>TENT</b>	NOI	RATIO	NALE	E:	(If ap	pli	icat			- East		_		_	
REMARKS:									IN	AL	EQU.	ATE ATE	[		]	
NO ISSUE. IOA CRIT NOMINALLY L", AND A	TO Y FO A "F	3/IR R A IRE	AND PIC T 2" AR	DELE O AR E RE	TII M A QU:	NG THI AND FI IRED.	S E RE	MEA PRE	MATU	M RE	THE LY,	IOA AN	CI "AR	L M"	LI:	ST. "FIRE
1537.	**,17714	<i>DD</i> C	CHDIN	TIAG	TUI	COMP	ONE	WIZ	OF.	TO	A F	MEAS	45	36	A	ND

ASSESSMEN ASSESSMEN NASA FMEA	T	ID		RMS-45	712/88 IS-4538 S-6ID-2505-1								•		SA DAT. ASELIN NE	E		x	]	
SUBSYSTEM MDAC ID:				RMS/EI 4538 PIC 6	PD&	C														
LEAD ANA	LYS	T:		ROBINS	301	ī														
ASSESSME	T.	;																		
•	CRI			ITY		RE	EDUN	DAN	C.	Y	SCI	REE	NS	;				CL CEM	1	
	I		JIGH' V/FU			A			1	В				С						
NASA IOA	[	2 2	/1R /1R	]	[	P P	]	[		F P	]		[ [	P P	]		[	X X	]	*
COMPARE	[		/	1	[		]	ĺ	•	N	]		[		1		[		]	
RECOMMEN	DA'	TI	ons:	(If	d	if	fere	ent	f	r	mc	nas	A	)						
	[		/	]	[		]		[		]		[		]	( A		/D		ETE)
* CIL RE	TE	NT	ION	RATION	IAL	E:	(11	f a	pp	1	ica	ble		A NA	DEQUAT DEQUAT	E E	[		]	
REMARKS: IOA CONC RECOMMEN RECOMMEN	CUR	AT1	3 37/7 T	7 TAR 1	יויםכ	NIN	ΠΑΝΙ	: Y	. T.	١ĸ	E.E.N	ı D		v	F •					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	7/17/87 RMS-4539 05-6ID-2513-1	NASA DATA BASELINE NEW	[ X ]
SUBSYSTEM:	RMS/EPD&C 4539 PIC 6		
LEAD ANALYST:	ROBINSON		
ASSESSMENT:			
FLIGHT		Y SCREENS	CIL ITEM
HDW/FUN	IC A	В С	
NASA [ 2 /1R IOA [ 2 /1R	] [P] [:	NA] [ P ] P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [ ] [1	и ј ј ј	[ ]
RECOMMENDATIONS:	(If different f	rom NASA)	
[ /	] [ ] [	] [ ] (AD	[ ] D/DELETE)
* CIL RETENTION R	ATIONALE: (If app	licable)	
REMARKS:		ADEQUATE INADEQUATE	[ ]
WALL MASA BASELINE	REDUNDANCY SCREEN	CREEN B. RECOMMEND N B TO "F". GREE WITH NASA FMEA	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4540 05-6ID-2	) 250:	5-1						SA DAT BASELIN NI	NE.	[ [ X		]	
	RMS/EPD8 4540 PIC 17	ĞС												
LEAD ANALYST:	ROBINSO	N												
ASSESSMENT:														
CRITICAL		RE	DUND	ANC	CY	SCI	REEN	S			CII			
FLIGH HDW/FU		A			В			С						
NASA [ 2 /1R IOA [ 2 /1R	] [	P P	]	[	F P	]	[	P P	]		[ ]	K K	]	*
COMPARE [ /					N		[		]		[		]	
RECOMMENDATIONS:	(If d	iff	eren	t:	fro	om 1	NASA	)						
[ /			]						1	(AI	[ DD/	DE	] :LI	ETE)
* CIL RETENTION	RATIONAL	E:	(If	ap)	pl.	ica		A.	DEQUAT DEQUAT				]	
REMARKS: IOA CONCURS. FAI RECOMMEND CHANGE RECOMMEND COMBIN	' TOA RET	NINI	DANCY	S	CR.	EEN	вл	.O	r					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	7/17/87 RMS-4541 05-6ID-25	MS-4541 BASELINE 5-6ID-2513-1 NEW							
SUBSYSTEM:	RMS/EPD&C 4541 PIC 17								
LEAD ANALYST:	ROBINSON								
ASSESSMENT:									
CRITICAL: FLIGHT		EDUNDANG	CY SCREE	NS	CIL ITEM				
HDW/FUI	NC A		В	С					
NASA [ 2 /1R IOA [ 2 /1R	] [ P	] [	NA] [	[ P ] [ P ]	[ X ] * [ X ]				
COMPARE [ /	] [	] [	N ]	. 1	[ ]				
RECOMMENDATIONS:	(If diff	ferent f	from NASA	<b>A</b> )					
[ /	] [	] [	] [		[ ] DD/DELETE)				
* CIL RETENTION H	RATIONALE:	(If app	olicable)						
			I	ADEQUATE NADEQUATE	[ ]				
REMARKS: FAILURE DOES NOT AND NASA BASELINE RECOMMEND COMBINE	E REDUNDANC	CY SCREE	SCREEN B.	RECOMMENI	CHANGE IO				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4542 05-6ID-2	2 2505 <b>-</b> 2		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD8 4542 PIC 6, 3				
LEAD ANALYST:	ROBINSO	4			
ASSESSMENT:					
CRITICAL: FLIGH		REDUNDA	NCY SCREEN	S	CIL ITEM
	NC	A	В	С	
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ [ P ] [	P ] P ]	[ x ] *
COMPARE [ N /	] [	]	[ ] [	1	[ N ]
RECOMMENDATIONS:	(If d	ifferent	from NASA	<b>'</b> )	
[ /	] [	1	[ ] [	P ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable)	ADEQUATE ADEQUATE	[ ]
REMARKS: NO ISSUE. AFTER IOA CRIT TO 3/1R NOMINALLY FOR A 1", AND A "FIRE IOA RECOMMENDS O	R AND DEL PIC TO A PIC TO A	ETING THE RM AND INTERPRETATION	HIS FMEA FE FIRE PREMAT	COM THE TOA	"ARM", "FIRE

4543.

ASSESSMENT II NASA FMEA #:	ATE: 2/15/8 D: RMS-4! 05-61	88 543 D-2513-2		NASA D. BASEL	ATA: INE [ X ] NEW [ ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/E	PD&C			
LEAD ANALYST	ROBINS	бои			
ASSESSMENT:					
	CALITY LIGHT	REDUND	ANCY SCR	EENS	CIL ITEM
	V/FUNC	A	В	С	
NASA [ 3 IOA [ 2	/1R ] /1R ]	[ P ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] * [ x ]
COMPARE [ N	/ 1	[ ]	[ ]	[ ]	[ N ]
RECOMMENDATIO	ONS: (If	differen	t from N	ASA)	
[	/ ]	[ ]	[ ]	[ P ]	[ ] (ADD/DELETE)
* CIL RETENTI REMARKS:	ON RATIONA	ALE: (If	applicabl	le) ADEQUAT INADEQUAT	FE [ ] FE [ ]
NO ISSUE. AF IOA CRIT TO 3	1/1R AND DE R A PIC TO RE 2" ARE	LETING T ARM AND REQUIRED	HIS FMEA FIRE PREM	FROM THE I	AN "ARM", "FIRE

ASSESSME	SESSMENT DATE: 1/12/88 SESSMENT ID: RMS-4544 SA FMEA #: 05-6ID-2503-1 BSYSTEM: RMS/EPD&C										SA DA ASELI N		-		]			
SUBSYSTEM MDAC ID:	M:			RMS/EP 4544 PIC 8	D٤	C												
LEAD ANA	LYS	T:		ROBINS	ON	ſ												
ASSESSME	NT:																	
	CRI			ITY.		RE	DUND	AN	CY	SC	REENS	3			C]	L EM	ſ	
	F		JIGHT I/FUI			A			В			С						
NASA IOA	[	2 2	/1R /1R	]	]	P P	]	]	F P	]	[	P P	]		]	X X	]	*
COMPARE	[		/	1	[		]	[	N	3	[		]		[		]	
RECOMMEN	IDA:	ric	ons:	(If	đ	if	feren	t	fr	om	NASA	)						
				]			]						]	(A)		/ <b>D</b> ]		ETE)
* CIL RE	ETE:	NT:	ION	RATION	AL	E:	(If	aŗ	pl	ica			DEQUA DEQUA				]	
REMARKS: IOA CONG RECOMMEN RECOMMEN	CUR	OTT	3 31/2 E	TON D	חם	IIN	DANCY	7 9	SCR	EED	ивл	U	"F"•			•		

ASSESSM ASSESSM NASA FM	ASSESSMENT DATE: 7/17/87 ASSESSMENT ID: RMS-4545 NASA FMEA #: 05-6ID-2511-1 SUBSYSTEM: RMS/EPD&C					1			ASA DATA BASELINI NEV		( ] ]	
SUBSYST	EM:		RMS 454 PIC	5	ıC							
LEAD AND	ALYS	T:	ROB	INSON	Ī							
ASSESSMI	ENT:											
		TICAL FLIGH DW/FU	T					REENS		CIL		
	n	DW/FU	NC		A		В	С				
NASA IOA	[ :	2 /1R 2 /1R	]	]	P] P]	[	NA] P]	[ P [ P	]	[ X	] <b>*</b>	
COMPARE	[	/	]	[	]	[	n j	[	]	[	]	
RECOMMEN	IDAT:	ions:	(1	f di	ffere	nt f	rom N	IASA)				
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* CIL RE	TENT	CION :	RATIC	NALE	: (If	app:	licab	le)				
REMARKS:					•			AD	EQUATE EQUATE	[ [	]	
FAILURE AND NASA RECOMMEN	DOES	TTTI.	E REL	UNDA	NCY S	CREE	1 B T	O "F".			ANGE IO	ÞΑ

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	3-1						ASA DA BASELI N		[		]			
	RMS/EPD 4546 PIC 19	&C												
LEAD ANALYST:	ROBINSO	N												
ASSESSMENT:														
CRITICAL		RE	DUNDA	NC	Y	sc	REEN	S			CI	L	ſ	
FLIGH HDW/FU		A			В			С					•	
NASA [ 2 /1R IOA [ 2 /1R	] [	P P	]	[	F P	]	[	P P	]		[	X X	]	*
COMPARE [ /	] [		]	[	N	]	[		]		[		]	
RECOMMENDATIONS:	(If d	ifi	erent	: 1	tro	mc	NASA	)						
[ /	] [		]	[		]	[		]	(A)		/DI		ETE)
* CIL RETENTION	RATIONAL	Æ:	(If a	ıpı	pl:	ica		Α	DEQUA' DEQUA'				]	
REMARKS: IOA CONCURS. FAI RECOMMEND CHANGE RECOMMEND COMBIN	: IOA REI	UNI	DANCY	S	CR	EEN	UNDA	NC O	Y SCRI	EEN	В		-	

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SUBSYST	DIT.			45	.o/ E.	PD.	&C													
LEAD AN	ALYS	ST	:	RO	BINS	SO	N													
ASSESSMI	ENT:	:																		
		FI	CAL:	r				EDUI	<b>VDAN</b>		sc	REE					IL FEN	M		
	I.	1DV	/FUI	NC			A			В			(	C						
NASA IOA	[	2 2	/1R /1R	]		[ [	P P	]	] [	N. P	A]		[ ]	P ]		]	X X	]	*	
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RECOMMEN	TADI	ic	ns:		(If	đi	lff	ere	ent	fro	om 1	NAS.	A)							
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															ATE	[ [		]		
REMARKS: FAILURE AND NASA RECOMMEN	DOE BA	SE	LINE	RI	EDUN	DA	NC	Y S	CRE	EN	B 3	ro '	"F"	١.			НА	ŊĠ	E :	IOA
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4548 05-6ID-2	3 2503 <b>-</b> 2		NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD8 4548 PIC 8, 3	&C			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL		REDUNDA	NCY SCREEN	S	CIL ITEM
FLIGH HDW/FU		A	В	С	<b>1 1 1 1 1 1 1 1 1 1</b>
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ [ P ] [	P ] P ]	[ ] * [ x ]
COMPARE [ N /	] [	1	[ ] [	1	[ N ]
RECOMMENDATIONS:	(If d	ifferent	from NASA	7)	
[ /	] [	]	[ ] [	[ P ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable)	ADEQUATE	[ ]
REMARKS: NO ISSUE. AFTER IOA CRIT TO 3/1F NOMINALLY FOR A 1", AND A "FIRE IOA RECOMMENDS OF	AND DEL PIC TO A	ETING THARM AND INTERPRETATION	IS IOA RECO HIS FMEA FI FIRE PREMAT	OMMENDS DOW ROM THE IOA FURELY, AN	NGRADING THE CIL LIST. "ARM", "FIRE

4549.

	ASSESSMI ASSESSMI NASA FMI	ASSESSMENT DATE: 2/15/88 ASSESSMENT ID: RMS-4549 VASA FMEA #: 05-6ID-2511-2 SUBSYSTEM: RMS/EPD&C										ASA BASE		[	X	]					
		EM:			RM 45		PD	&C													
	LEAD ANA	ALY	ST	:	RC	BIN	SO	N													
	ASSESSMI	ENT	:																		
			F	ICAL LIGH	r			R	EDUND	AN	CY	SCRE	EEN:	s				IL PEN			
			HD	W/FU	NC			A			В			С					_		
	NASA IOA	[	3 2	/1R /1R	]		]	P P	]	[ [	P P	]	]	P P	]		[	x	]	*	
	COMPARE	[	N	/	]		[		]	[		]	[		]		[	N	]		
	RECOMMEN	IDA'	TI	ons:		(If	đ	Ĺfí	feren	t 1	fro	om NA	SA)	)							
		[		/	]		[		]	[		]	[	P	]	(AI		DE		TE)	)
	* CIL RE	TE	NT:	ION I	RAT	IONA	LE	E:	(If	app	ol i	cabl	.e)								
]	REMARKS:												IN		EQUA EQUA				]		
]	NO ISSUE IOA CRIT NOMINALL	T(	O : FOI	3/1R R A I	AN PIC	D DE TO	LE AF	ITI M	NG T	HIS FIR	F	MEA	FRC	M	чнт	TOA	CT	т .	TT	c m	
	l", AND IOA RECO	MMI	ENI	OS CO	MB	AKE ININ	RE IG	QU TH	E COI	MPC	NE	NTS	OF	IC	A FM	EAs	45	48	A	ND	

4549.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	SUBSYSTEM: RMS/EPD&C						SA DAT ASELIN NI	IE	x	]	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPM 4550 PIC 10	D&C									
LEAD ANALYST:	ROBINS	ОИ									
ASSESSMENT:											
CRITICAL		RI	EDUND	ANCY	SCRE	ENS			CIL ITEI	ч	
FLIGH HDW/FU		A		В		С					
NASA [ 2 /1H IOA [ 2 /1H	R ] R ]	[ P	]	[ F [ P	]	[ P	]		[ X [ X	] *	k
COMPARE [ /	]	[	]	[ N	1	[	]		[	)	
RECOMMENDATIONS	: (If	dif	ferer	nt fr	om N	ASA)					
[ /		[	]	ſ	3	[	1	(AI	[ DD/D		TE)
* CIL RETENTION	RATION	ALE:	(If	appl	icab.	4.	DEQUA!		[	]	
REMARKS: IOA CONCURS. FAILURE DOES NOT PASS REDUNDANCY SCREEN B. RECOMMEND CHANGE IOA REDUNDANCY SCREEN B TO "F". RECOMMEND COMBINING IOA FMEAS TO AGREE WITH NASA FMEA.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			1	NASA Base		[	ן <b>X</b>				
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4551 PIC 10	)&C							-	•	
LEAD ANALYST:	ROBINSO	N									
ASSESSMENT:											
CRITICAL: FLIGHT HDW/FUI	r		JNDAN		SCREI				CII	_	
IIDW/ FOI	10	A		В		C					
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[	P P	]	[ P	]		[ X [ X	[ ]	*
COMPARE [ /	] [	]	ſ		]	[	]		E	]	
RECOMMENDATIONS:	(If d	iffer	ent i	froi	n NAS	A)					
[ /	] [	]	[		)	[	]	(AD	[ D/D	] ELE	TE)
* CIL RETENTION R	ATIONALE	E: (I	fapr	ol i c	rahla	١					·
REMARKS:						IA IANI	DEQUA	TE TE	[	]	
FAILURE DOES NOT AND NASA BASELINE RECOMMEND COMBINI	REDIMINA	NOV	こくひせせ	BT T						ANG:	E IOA

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4552 05-6ID-2	501-1			SA DATA: BASELINE NEW	[	]
	RMS/EPD& 4552 PIC 21	С					
LEAD ANALYST:	ROBINSON	•					
ASSESSMENT:							
CRITICAL: FLIGHT HDW/FU	r	REDUND	ANCY S	CREENS C		CIL	
NASA [ 2 /1R IOA [ 2 /1R		P ] P ]	[ F ] [ P ]	[ P	]	[ X	] *
COMPARE [ /	] [	]	[ N ]	[	]	[	1
RECOMMENDATIONS:					1	[	
					· (A	ט /טט	ELETE)
* CIL RETENTION	RATIONAL	E: (II	applic	able) A INA	DEQUATE DEQUATE	[ [	]
REMARKS: IOA CONCURS. FAI RECOMMEND CHANGE RECOMMEND COMBIN	TOA REDI	JNDANC	Y SCREE	EN B TO	"F".		

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SUBSYSTE MDAC ID:	31.1 •		RMS 455 PIC	) EPD:	&C											
LEAD ANA	LYS	T:	ROB	INSO	N.											
ASSESSME	ENT:															
		TICAL			REI	OUNDAN	CY	SCI	REEN	S			CI		•	
		DW/Ft			A		В			С			T.T	EM	•	
NASA IOA	]	2 /1F 2 /1F	t ]	]	P ]	[	N. P	A]	[ ]	P P	]		]	X X	] ;	k
COMPARE	[	/	]	[	]	[	N	]	[		]		[		]	
RECOMMEN	DAT	ions:	(:	If di	iffe	rent	fr	om N	NASA	)						
	ſ	/	]	[	)	(			ľ			(AD		DE		Œ)
* CIL RE	TEN	TION	RATIO	ONALE	E: (	If ap	pl:	icab	ole)							
									I		DEQUATI DEQUATI		[ [		]	
AND NASA	INADEQUATE [ ] EMARKS: AILURE DOES NOT PASS REDUNDANCY SCREEN B. RECOMMEND CHANGE IOA ND NASA BASELINE REDUNDANCY SCREEN B TO "F". ECOMMEND COMBINING IOA FMEAS TO AGREE WITH NASA FMEA.															

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4554 05-6ID-2	1 2501-2			NASA DATA: BASELINE NEW	
SUBSYSTEM:	RMS/EPD8 4554 PIC 10,	¥C				
LEAD ANALYST:	ROBINSO	Ŋ				
ASSESSMENT:						
CRITICAL: FLIGH		REDUNDA	NCA	SCREENS	5	CIL ITEM
	NC	A	В		С	
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P	] [	P ] P ]	[ x ] *
COMPARE [ N /	] [	1	(	] [	]	[ N ]
RECOMMENDATIONS:	(If d	ifferent	fre	om NASA	)	
[ /	] [	]	[	] [	] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	appl		ADEQUATE NADEQUATE	[ ]
REMARKS: NO ISSUE. AFTER IOA CRIT TO 3/1R NOMINALLY FOR A 1", AND A "FIRE IOA RECOMMENDS O	AND DEL PIC TO A	ETING TI RM AND I EOUIRED	HIS FIRE	FMEA FR PREMAT	OM THE IOA URELY, AN	"ARM", "FIRE

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2/15/88 RMS-4555 05-6ID-2509-2	NASA DATA BASELINE NEW	•
RMS/EPD&C 4555 PIC 10, 21		
ROBINSON		
r	NCY SCREENS	CIL ITEM
NC A	В С	
] [ P ] ] [ P ]	[P] [P] [P] [P]	[ ] * [ x ]
] [ ]	[ ] [ ]	[ N ]
(If different	from NASA)	
] [ ]		[ ] DD/DELETE)
RATIONALE: (If a	oplicable)	
	ADEQUATE INADEQUATE	[ ]
AND DELETING THE PIC TO ARM AND FE " ARE REQUIRED.	S IOA RECOMMENDS DOWN IS FMEA FROM THE IOA IRE PREMATURELY, AN	NGRADING THE CIL LIST. 'ARM", "FIRE
	RMS/EPD&C 4555 PIC 10, 21 ROBINSON  TY REDUNDATE  TO A  [ P ] [ P ] [ P ] [ ]  (If different [ ]  (ATIONALE: (If a)  FURTHER ANALYSIS AND DELETING THE PIC TO ARM AND FOR THE PIC TO AR	RMS-4555  05-6ID-2509-2  RMS/EPD&C 4555 PIC 10, 21  ROBINSON  TY REDUNDANCY SCREENS  C A B C  [P] [P] [P] [P]  [P] [P] [P]  [If different from NASA)  [If different from NASA)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-455 05-6ID-	_		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4556 PIC 2	&C			
LEAD ANALYST:	ROBINSC	N			
ASSESSMENT:					
CRITICA		REDUN	DANCY SCREI	ens	CIL ITEM
FLIG HDW/F		A	В	С	
NASA [ 2 /1 IOA [ 2 /1	R ] [	[ P ] [ P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	]	[ ]	[и]	[ ]	[ ]
RECOMMENDATIONS	: (If o	differe	nt from NA	SA)	
[, /	]	[ ]	[ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONA	LE: (Ii	applicabl	e) ADEQUATE INADEQUATE	[ ]
REMARKS: IOA CONCURS. FA RECOMMEND CHANG RECOMMEND COMB	TO TO DE	אמתמוחי	Y SCREEN E	TO "F"	

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MDAC ID:	RMS/EPD& 4558 PIC 13	iC				
LEAD ANALYST:	ROBINSON	ī				
ASSESSMENT:						
CRITICAL		REDUND	ANCY SCRE	ENS	CIL ITEM	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-456 05-6ID-	1 2514-2		NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID:		&C			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL FLIGH	T				CIL ITEM
HDW/FU	NC	A	В	С	
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NASA FMEA #:	05-6ID-25	04-1			NEW	[ X	]
	RMS/EPD&C 4562 PIC 7	:					
LEAD ANALYST:	ROBINSON					•	
ASSESSMENT:							
CRITICAL		REDUNDA	NCY :	SCREENS	5	CIL ITEM	4
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SUBSYSTI MDAC ID: ITEM:	M:		RMS/E 4563 PIC 7	PD&	C											
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		1 2504-1		NASA DATA: BASELINE NEW	
MDAC ID:	RMS/EPD8 4564 PIC 18	&C			
LEAD ANALYST:	ROBINSO	1			
ASSESSMENT:					
CRITICAL		REDUND	ANCY SCRE	ENS	CIL ITEM
FLIGHT HDW/FU		A	В	С	
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SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD 4565 PIC 18	&C			
LEAD ANALYST:	ROBINSON	1			
ASSESSMENT:					
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4566 05-6ID-2	504-2			NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD& 4566 PIC 7, 1					
LEAD ANALYST:	ROBINSON	ī				
ASSESSMENT:						
CRITICAL FLIGH		REDUNDA				CIL ITEM
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SUBSYSTEM:		&C						
LEAD ANALYST:	ROBINSO	1						
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	I		LIGH V/FU			A			В			(	С					
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ASSESSMENT	T:																	
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SUBSYSTEM: MDAC ID:		4572											
ITEM:		PIC 9,	20										
LEAD ANALYS	T:	ROBINS	ON										
ASSESSMENT:													
			RE	DUNDA	NC	Y SCREE	NS			CIL			
н	FLIGHT	NC	A			В	(	С					
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SUBSYSTEM: MDAC ID:	RMS/EPE 4573 PIC 9,	)&C										
LEAD ANALYST:	ROBINSO	N										
ASSESSMENT:												
CRITICAL FLIGH		REDUND	ANCY SCE	REENS	CIL ITEM							
HDW/FU	NC											
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ ] * [ X ]							
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* CIL RETENTION	RATIONAL	E: (If a	pplicab									
REMARKS:				ADEQUATI INADEQUATI								
REMARKS:  NO ISSUE. AFTER FURTHER ANALYSIS IOA RECOMMENDS DOWNGRADING THE IOA CRIT TO 3/1R AND DELETING THIS FMEA FROM THE IOA CIL LIST.  NOMINALLY FOR A PIC TO ARM AND FIRE PREMATURELY, AN "ARM", "FIRE 1", AND A "FIRE 2" ARE REQUIRED.  IOA RECOMMENDS COMBINING THE COMPONENTS OF IOA FMEAS 4572 AND												
4573.		COP	OHEH 19	OF TOR FMEA	15 45/2 AND							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	RMS-4574	2500-1	NASA DAT BASELIN NE		]		
MDAC ID:	RMS/EPD8 4574 PIC 11	kC					
LEAD ANALYST:	ROBINSON	1					
ASSESSMENT:							
CRITICAL		REDUN	IDANCY	SCREENS	5	CIL ITEN	4
FLIGH HDW/FU		A	В		С		
NASA [ 2 /1R IOA [ 2 /1R	[	P ] P ]	[ F [ P	] [	P ] P ]	[ X ]	] <b>*</b>
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	RMS/EPD 4575 PIC 11	&C			
LEAD ANALYST:	ROBINSO	N			
ASSESSMENT:					
CRITICAL FLIGH	T	REDUN	DANCY SCR	EENS	CIL ITEM
HDW/FU		A	В	С	
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* CIL RETENTION I	RATIONALE	: (If	applicabl	.e)	·
REMARKS:		·	••	ADEQUATE INADEQUATE	[ ] [ ]
FAILURE DOES NOT AND NASA BASELINE RECOMMEND COMBINI	REDUNDA	NCV SC	DEEN B TO	II EH	D CHANGE 102

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/12/88 RMS-4576 05-6ID-2	500-1		NASA DAT BASELIN NE									
MDAC ID:	RMS/EPD& 4576 PIC 22	C											
LEAD ANALYST:	ROBINSON	Ī											
ASSESSMENT:													
CRITICAL		REDUNDA	ANCY SCR	EENS	CIL ITEM								
FLIGHT HDW/FUI		A	В	С									
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ]	*							
COMPARE [ /	] [	1	[ N ]	[ ]	[ ]								
RECOMMENDATIONS:	(If di	ifferen	t from N	ASA)									
[ /	] [	3	[ ]	[ ]	[ ] (ADD/DELE	TE)							
* CIL RETENTION	RATIONALI	E: (If	applicab	ADEQUATI									
PECOMMEND CHANGE	INADEQUATE [ ]												

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 7/17/87 RMS-4577 05-6ID-25	508-1		NASA DATA BASELINE NEW	[ X ]
SUBSYSTEM: MDAC ID: ITEM:	RMS/EPD&C 4577 PIC 22	2			
LEAD ANALYST:	ROBINSON				
ASSESSMENT:					
CRITICA FLIG HDW/F	IT	REDUNDANO	CY SCREI	ENS C	CIL ITEM
NASA [ 2 /1] IOA [ 2 /1]	R ] [ F	, ] [	NA] P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [	] [	и ј	[ ]	[ ]
RECOMMENDATIONS	(If dif	ferent f	from NAS	SA)	
[ /	] [	] [	]	[ ] (AI	[ ] DD/DELETE)
* CIL RETENTION REMARKS:	RATIONALE:	(If app	olicable	e) ADEQUATE INADEQUATE	[ ]
FAILURE DOES NOT AND NASA BASELIN RECOMMEND COMBIN	IE REDUNDAN	CY SCREE	N B TO	"F".	

ASSESSMENT DATE: 2/15/88 ASSESSMENT ID: RMS-4578 NASA FMEA #: 05-6ID-2500-2											1		SA D ASEL		[ :	X	]	
SUBSYSTE MDAC ID:				RMS/ 4578 PIC			2											
LEAD ANA	LYS	ST:	:	ROBI	NSO	N												
ASSESSME	TI	:																
CRITICALITY REDUNDANCY SCREENS FLIGHT										CI IT		Ī						
	1			NC I		A			В		ı	С				1,17		
NASA IOA	[	3 2	/1R /1R	]	[	P P	]	[ [	P P	]	[	P P	]		[	x	] <b>*</b>	
COMPARE	[	N	/	]	[		]	[		]	[		]		[	N	]	
RECOMMEN	IDA'	TI	ons:	(3	f d	if:	fere	nt :	fr	om N	IASA)							
	[		/	]	ξ		]	[		]	[		]	(Al		DE	] ELETE	:)
* CIL RI	ETE:	NT:	ION :	RATIO	ONAL	E:	(If	ap)	ρl	icak			DEQU <i>I</i>				]	
REMARKS NO ISSUI	Ε.	A	FTER	FUR:	THER	A)	NALY	SIS THT	I	OA F	RECOM	MI M	ENDS THE	DOW!	NGF CI	lAI L	OING LIST	TH

IOA CRIT TO 3/1R AND DELETING THIS FMEA FROM THE IOA CIL LIST.
NOMINALLY FOR A PIC TO ARM AND FIRE PREMATURELY, AN "ARM", "FIRE
1", AND A "FIRE 2" ARE REQUIRED. IOA RECOMMENDS COMBINING THE COMPONENTS OF IOA FMEAS 4578 AND 4579.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/15/88 RMS-4579 05-6ID-2508-2	2	NASA DATA BASELINI NEV							
SUBSYSTEM: MDAC ID:										
LEAD ANALYST:	·									
ASSESSMENT:										
	ITY REDUN	IDANCY SCREEN	1S	CIL ITEM						
	FLIGHT HDW/FUNC A B C									
NASA [ 3 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [	P ] P ]	[ ] * [ X ]						
COMPARE [ N /	] [ ]	[ ] [	. 1	[ N ]						
RECOMMENDATIONS:	(If differe	ent from NASA	7)							
[ /	] [ ]	[ ] [		[ ] ADD/DELETE)						
* CIL RETENTION 1	RATIONALE: (If	,	ADEQUATE	[ ]						
REMARKS: NO ISSUE. AFTER IOA CRIT TO 3/1R NOMINALLY FOR A 1 1", AND A "FIRE 2 IOA RECOMMENDS CO 4579.	AND DELETING PIC TO ARM AND 2" ARE REQUIRE	SIS IOA RECO THIS FMEA FF FIRE PREMAT	MMENDS DOW OM THE IOA URELY, AN	NGRADING THE CIL LIST. "ARM", "FIRE						

APPENDIX D

CRITICAL ITEMS

# APPENDIX D EPD&C/RMS 05-61A

NASA FMEA	IOA ID	ITEM NAME	. FAILURE MODE
05-61A-2028-1X	4001	SWITCH, S4	FAILS TO SWITCH FROM OFF.
05-61A-2028-5	4002	SWITCH, S4	SHORTS TO GND WHILE IN USE.
05-61A-2028-1X	4003	SWITCH, S4	FAILS TO SWITCH PRI PWR ON.
05-61A-2028-1X	4004	SWITCH, S4	FAILS TO SWITCH BACKUP ON.
05-61A-2028-2X	4005	SWITCH, S4	PRI PWR FAILS OPEN IN USE.
05-61A-2028-6	4006	SWITCH, S4	FAILS CLOSED IN PRIMARY POS.
05-61A-2029-5	4007	SWITCH, S1	FAILS TO SWITCH FROM OFF.
05-61A-2029-5	4008	SWITCH, S1	SHORTS TO GND WHILE IN USE.
05-61A-2029-5	4009	SWITCH, S1	FAILS OPEN WHILE ARM IN USE.
05-61A-2026-1	4010	SWITCH, S8	
05-61A-2026-1	4011	SWITCH, S10	FAILS OFF WHILE ARM IN USE.
05-61A-2026-2	4012	S8, S10	FAILS TO SWITCH FROM OFF.
05-61A-2026-1	4013	SWITCH, S7	FAILS OFF WHILE ARM IN USE.
05-61A-2026-1	4014	SWITCH, S9	FAILS TO SWITCH OFF.
05-61A-2026-2	4015	S7, S9	FAILS TO SWITCH OFF.
05-61A-2003-1	4016	FUSE, F1	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2003-1	4017	FUSE, F1	FAILS OPEN WHILE IN USE.
05-61A-2002-1	4018	FUSE, F2	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2002-1	4019	FUSE, F2	FAILS OPEN WHILE IN USE.
05-61A-2076-1	4020	RES, A3R2	FAILS OPEN.
05-61A-2076-1	4021	RES, A3R3	FAILS OPEN.
05-61A-2076-1	4022	RES, A2R2	FAILS OPEN.
05-61A-2076-1	4023	RES, A2R3	FAILS OPEN.
05-61A-2006-1	4028	CB17	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2006-1	4029	CB17	FAILS OPEN WHILE IN USE.
05-61A-2001-1	4031	CB19	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2001-1	4032	CB19	FAILS OPEN WHILE IN USE.
05-61A-2126-1	4034	RELAY, K1	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2126-1	4035	RELAY, K1	FAILS OPEN WHILE IN USE.
05-61A-2126-2	4036	RELAY, K1	FAILS CLSD, APPL UNTINELY PWR.
05-61A-2126-1	4037	RELAY, K2	FAILS OPEN PRIOR TO DEPLOY.
05-61A-2126-1	4038	RELAY, K2	FAILS OPEN WHILE IN USE.
05-61A-2126-2	4039	RELAY, K2	FAILS CLSD, APPL UNTIMELY PWR.
05-61A-2004-1	4040	FUSE, F26	FAILS OPEN.
05-61A-2004-1	4041	FUSE, F27	FAILS OPEN.
05-61A-2176-1	4042	RPC 27	OPEN, FAILS TO CLOSE.
05-61A-2176-1	4043	RPC 26	OPEN, FAILS TO CLOSE.
05-61A-2178-1	4044	RPC 4	OPEN, FAILS TO CLOSE.
05-61A-2179-1	4045	RPC 31	OPEN, FAILS TO CLOSE.
05-61A-2179-1	4046	RPC 30	OPEN, FAILS TO CLOSE.
05-61A-2176-1	4047	RPC 28	OPEN, FAILS TO CLOSE.
05-61A-2176-1	4048	RPC 29	OPEN, FAILS TO CLOSE.
05-61A-2028-9	4049	SWITCH, S4	POLE-POLE, CONT-CONT SHRT
05-61A-2176-2	4053	RPC 26,	OPEN, FAILS TO CLOSE.
05-61A-2179-2	4054	RPC 30,	OPEN, FAILS TO CLOSE.

# APPENDIX D: EPD&C/RMS 05-61B

NASA FMEA	IOA ID	ITEM NAME	FAILURE MODE
05-6-2658-1 05-6-2658-1 05-618-MPM-2A 05-61B-MPM-2B 05-61B-MPM-2B 05-61B-MPM-2B 05-61B-MPM-2C 05-61B-MPM-2C 05-61B-MPM-2C 05-61B-MPM-2C 05-61B-MPM-5 05-61B-MPM-5 05-61B-MPM-5	4101 4103 4105 4106 4107 4108 4108 4108 4108 4108 4114 4116 4118 4120 4122	SWITCH, S1 SWITCH, S2 SWITCH, S5 SWITCH, S2 HYB REL, K72 HYB REL, K49 HYB REL, K60 HYB REL, K51 HYB REL, K22	OPEN, FAILS TO CLOSE.  OPEN, FAILS TO CLOSE.  OPEN, FAILS TO CLOSE DEPL/STOW.  FAILS CLOSED, APPL UNTIMELY PWR.  FAILS CLOSED, APPL UNTIMELY PWR.
05-618-MPM-5 05-618-MPM-5 05-618-MPM-5 05-618-MPM-2F	4124 4126 4128		FAILS CLOSED, APPL UNTIMELY PWR. FAILS CLOSED, APPL UNTIMELY PWR.

# APPENDIX D: EPD&C/RMS 05-61C

NASA FMEA	IOA ID	ITEM NAME	FAILURE MODE
05-6IC-MRL-6 05-6IC-MRL-6 05-6IC-MRL-6 05-6IC-MRL-6 05-6IC-MRL-6 05-6IC-MRL-6 05-6IC-MRL-6	4206 4208 4240 4242 4262 4264 4284 4286 4306	HYB REL, K8 HYB REL, K64 HYB REL, K43 HYB REL, K57 HYB REL, K73 HYB REL, K76 HYB REL, K66 HYB REL, K44 HYB REL, K71	FAILS CLOSED, APPL UNTIMELY PWR.
05-61C-MRL-6 05-61C-MRL-6 05-61C-MRL-6 05-61C-MRL-2 05-61C-MRL-2B 05-61C-MRL-2B 05-61C-MRL-2B 05-61C-MRL-2E 05-61C-MRL-2E	4308 4328 4330 4346 4347 4349 4350 4351	HYB REL, K74 HYB REL, K12 HYB REL, K29 SWITCH, S6 SWITCH, S6 SWITCH, S6 SWITCH, S6 SWITCH, S6 SWITCH, S6	FAILS CLOSED, APPL UNTIMELY PWR. FAILS CLOSED, APPL UNTIMELY PWR. FAILS CLOSED, APPL UNTIMELY PWR. FAILS OPEN FAILS CLOSED (ON)

# APPENDIX D: EPD&C/RMS 05-61D

NASA FMEA	IOA	ID ITEM NAME	FAILURE MODE
05-6ID-2128-1	4209	RELAY, K44	5411 5 CLOSED
05-6ID-2127-1			FAILS CLOSED.
05-610-2126-1			FAILS CLOSED.
05-610-2128-1			FAILS OPEN.
05-6ID-2127-1			FALLS OPEN.
05-6ID-2126-1			FALLS OPEN.
05-6ID-2036-1			FAILS OPEN.
05-61D-2036-2	4502		FAILS CLOCKED IN SAFE POS.
05-6ID-2031-1			FAILS CLOSED, APPL UNTIMELY PWR.
05-61D-2031-2	4504		FALLS CLOSED AND WAR
05-6ID-2032-1	4505		FALLS LOCKED, APPL UNTIMELY PWR.
05-610-2032-2	4506		FAILS CLOSED AND WELL
05-610-2027-1	4507		FAILS CLOSED, APPL UNTIMELY PWR. FAILS LOCKED IN SAFE POS.
05-61D-2027-2	4508		FATIS CLOSED ADDL HATTER
05-610-2033-1	4509	-	FAILS CLOSED, APPL UNTIMELY PWR. FAILS LOCKED IN SAFE POS.
05-61D-2033-2			FAILS CLOSED, APPL UNTIMELY PWR.
05-610-2028-1		SWITCH, S31	FAILS LOCKED IN SAFE POS.
05-61D-2028-2		SWITCH, S31	FAILS CLOSED, APPL UNTIMELY PWR.
05-6ID-2034-1			ALLE ON THE TABLE
05-61D-2034-2		SWITCH, S23	
05-610-2029-1		SWITCH, S30	
05-610-2029-2		SWITCH, S30	The same of the sa
05-610-2035-1		SWITCH, \$22	FAILS LOCKED IN SAFE POS.
05-61D-2035-2		SWITCH, S22	FAILS CLOSED, APPL UNTIMELY PWR.
05-61D-2030-1	4519		FAILS LOCKED IN SAFE POS.
05-610-2030-2		SWITCH, S29	FAILS CLOSED, APPL UNTIMELY PWR.
05-61D-2026-1		SWITCH, \$33	FAILS LOCKED IN SAFE POS.
05-6ID-2003-1		CKT BRK, CB27	FAILS OPEN. WILL NOT CLOSE
05-6ID-2002-1		CKT BRK, CB29	FAILS OPEN. WILL NOT CLOSE.
05-6ID-2003-1		CKT BRK, CB33	FAILS OPEN. WILL NOT CLOSE.
05-61D-2002A-1		CKT BRK, CB32	FAILS OPEN. WILL NOT CLOSE.
05-61D-2507-1		PIC 1	FAILS TO ARM AND/OR FIRE.
05-61D-2515-1 05-61D-2507-1		PIC 1	FAILS TO ARM AND/OR FIRE.
05-6ID-2515-1		PIC 12	FAILS TO ARM AND/OR FIRE.
05-610-2507-2		PIC 12	FAILS TO ARM AND/OR FIRE.
05-6ID-2515-2	4536	PIC 1, 12	ARMS/FIRES PREMATURELY.
05-61D-2505-1	4537	PIC 1, 12	PIC ARMS/FIRES PREMATURELY.
05-6ID-2513-1	4538 4539	PIC 6	FAILS TO ARM AND/OR FIRE.
05-61D-2505-1	4540	PIC 6	FAILS TO ARM AND/OR FIRE.
05-6ID-2513-1	4541	PIC 17	FAILS TO ARM AND/OR FIRE.
00 (10 001 -	4542	PIC 17	FAILS TO ARM AND/OR FIRE.
A	4543	PIC 6, 17 PIC 6, 17	ARMS/FIRES PREMATURELY.
A	4544	PIC 8, 17	ARMS/FIRES PREMATURELY.
	4545	PIC 8	FAILS TO ARM AND/OR FIRE.
05-610-2503-1	4546	PIC 19	FAILS TO ARM AND/OR FIRE.
05-61D-2511-1	4547	PIC 19	FAILS TO ARM AND/OR FIRE.
05-61D-2503-2	4548	PIC 8, 19	FAILS TO ARM AND/OR FIRE.
	_	· · · · · · · · · · · · · · · · · · ·	PIC ARMS/FIRES PREMATURELY.

APPENDIX D: EPD&C/RMS 05-61D (Concluded)

NASA FMEA	IOA ID	ITEM NAME	FAILURE MODE
05-6ID-2511-2	4549	PIC 8, 19	PIC ARMS/FIRES PREMATURELY.
05-61D-2501-1		PIC 10	FAILS TO ARM AND/OR FIRE.
05-6ID-2509-1		PIC 10	FAILS TO ARM AND/OR FIRE.
05-6ID-2501-1		PIC 21	FAILS TO ARM AND/OR FIRE.
05-61D-2509-1		PIC 21	FAILS TO ARM AND/OR FIRE.
05-610-2501-2		PIC 10, 21	PIC ARMS/FIRES PREMATURELY.
05-610-2509-2		PIC 10, 21	PIC ARMS/FIRES PREMATURELY.
05-6ID-2506-1		PIC 2	FAILS TO ARM AND/OR FIRE.
05-6ID-2514-1	4557	PIC 2	FAILS TO ARM AND/OR FIRE.
05-61D-2506-1	4558	PIC 13	FAILS TO ARM AND/OR FIRE.
05-6ID-2514-1	4559	PIC 13	FAILS TO ARM AND/OR FIRE.
05-610-2506-2	4560	PIC 2, 13	PIC ARMS/FIRES PREMATURELY.
05-61D-2514-2	4561	PIC 2, 13	PIC ARMS/FIRES PREMATURELY.
05-6ID-2504-1	4562	PIC 7	FAILS TO ARM/FIRE.
05-6ID-2512-1	4563	PIC 7	FAILS TO ARM/FIRE.
05-6ID-2504-1	4564	PIC 18	FAILS TO ARM/FIRE.
05-61D-2512-1	4565	PIC 18	FAILS TO ARM/FIRE.
05-61D-2504-2	4566	PIC 7, 18	PIC ARMS/FIRES PREMATURELY.
05-61D-2512-2	4567	PIC 7, 18	PIC ARMS/FIRES PREMATURELY.
05-6ID-2502-1	4568	PIC 9	FAILS TO ARM/FIRE.
05-6ID-2510-1	4569	PIC 9	FAILS TO ARM/FIRE.
05-6ID-2502-1		PIC 20	FAILS TO ARM/FIRE.
05-61D-2510-1	4571	PIC 20	FAILS TO ARM/FIRE.
05-61D-2502-2	4572	PIC 9, 20	PIC ARMS/FIRES PREMATURELY.
05-6ID-2510-2		PIC 9, 20	PIC ARMS/FIRES PREMATURELY.
05-61D-2500-1		PIC 11	FAILS TO ARM/FIRE.
05-6ID-2508-1		PIC 11	FAILS TO ARM/FIRE.
05-610-2500-1		P1C 22	FAILS TO ARM/FIRE.
05-61D-2508-1		PIC 22	FAILS TO ARM/FIRE.
05-61D-2500-2		PIC 11, 22	PIC ARMS/FIRES PREMATURELY.
05-610-2508-2		PIC 11, 22	PIC ARMS/FIRES PREMATURELY.
03-010-5300-5	7717		•

# APPENDIX E DETAILED ANALYSIS

This appendix contains the IOA analysis worksheets supplementing previous results reported in STSEOS Working Paper 1.0-WP-VA86001-023, Analysis of the Remote Manipulator System, (12 January 1987). Prior results were obtained independently and documented before starting the FMEA/CIL assessment activity. Supplemental analysis was performed to address failure modes not previously considered by the IOA. Each sheet identifies the hardware item being analyzed, parent assembly and function performed. For each failure mode possible causes are identified, and hardware and functional criticality for each mission phase are determined as described in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986. Failure mode effects are described at the bottom of each sheet and worst case criticality is identified at the top.

# LEGEND FOR IOA ANALYSIS WORKSHEETS

### Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item (like or unlike) could cause loss of life/vehicle
- 3 = All others

# Functional Criticalities:

- 2R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of mission.

### Redundancy Screen A:

- 1 = Is Checked Out PreFlight
- 2 = Is Capable of Check Out PreFlight
- 3 = Not Capable of Check Out PreFlight
- NA = Not Applicable

# Redundancy Screens B and C:

- p = Passed Screen
- F = Failed Screen
- NA = Not Applicable

DATE: 2/01/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 1/1 MDAC ID: 4049 ABORT: /NA

ITEM: SWITCH, S4

FAILURE MODE: POLE TO POLE SHORT, CONTACT TO CONTACT SHORT,

SHORT TO CASE

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IA
- 2) REMOTE MANIPULATOR ARM
- 3) PANEL A8A2
- 4) RMS POWER SWITCH, PRIMARY/OFF/BACKUP
- 5) SWITCH, TOGGLE, MAINTAINED 6) SWITCH, 4-POLE, 3-POSITION
- 7) SWITCH, S4

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	1/1	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFIN	IG: /NA		,

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 36V73A8A2S4 PART NUMBER: ME452-0102-7403

CAUSES: PIECE PART STRUCTURAL FAILURE

#### EFFECTS/RATIONALE:

LOSS OF ABILITY TO PROVIDE EITHER PRIMARY OR BACKUP 28 VDC AND 115 VAC POWER TO EITHER THE PORT OR STBD REMOTE MANIPULATOR ARM. LOSS OF POWER TO AN RMS IN USE COULD REQUIRE JETTISON OF THE RMS IF SAFE JETTISON IS AN OPTION. IF THE RMS CANNOT BE SAFELY JETTISONED, LOSS OF VEHICLE/CREW COULD RESULT.

HIGHEST CRITICALITY HDW/FUNC 2/10/88

DATE: FLIGHT: 3/3 SUBSYSTEM: RMS/EPD&C ABORT: /NA

4050 MDAC ID:

RESISTOR, A2R2, A2R3, A3R2, A3R3 ITEM:

FAILURE MODE: SHORTED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

# BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IA
- 2) REMOTE MANIPULATOR ARM
- 3) PANEL A8A2
- 4) STBD & PORT HEATER
- 5) RESISTOR, CURRENT LIMITING
- 6) RESISTOR, 1.2K OHM, 2 WATT
- RESISTOR, A2R2, A2R3, A3R2, A3R3 7)

8) 9)

CRITICALITIES

	CRITICA	LITIES	
FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING:	HDW/FUNC /NA /NA 3/3 /NA /NA	ABORT RTLS: TAL: AOA: ATO:	HDW/FUNC /NA /NA /NA /NA

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 36V73A8A2A2R2, A2R3, A3R2, A3R3

PART NUMBER: RWR80S1211FR (4 EACH)

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK

EFFECTS/RATIONALE:

LOSE CURRENT LIMITING CIRCUIT PROTECTION FOR HEATER INPUT POWER CONTROL CIRCUITS.

DATE: 2/10/88 SUBSYSTEM: RMS/EPD&C

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

/NA

MDAC ID: 4051

ABORT:

CIRCUIT BREAKER, 1 PH 3A RMS, BACKUP POWER

FAILURE MODE: FAILS CLOSED, FAIL TO TRIPP ON OVERLOAD, PREMATURE

CLOSED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- RMS, 05-61A
- 2) REMOTE MANIPULATOR ARM
- 3) PANEL M73C
- 4) AC SYSTEM 2 POWER
- CIRCUIT BREAKER, 1-PH, 3 AMP

CIRCUIT BREAKER, CB19

7)

8)

9)

CRITICALITIES

FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING	HDW/FUNC /NA /NA 3/3 /NA	ABORT RTLS: TAL: AOA: ATO:	HDW/FUNC /NA /NA /NA /NA
LANDING/SAFING:	/NA		/ 1121

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 85V73A129CB19 PART NUMBER: MC454-0026-2030

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION

# EFFECTS/RATIONALE:

LOSS OF ABILITY TO PROVIDE CIRCUIT PROTECTION FOR BACKUP AC POWER (SYSTEM 2) TO THE RMS LOAD PANEL A8A1 POWER CONTROL CIRCUIT. POWER CAN BE REMOVED BY SWITCH.

CIRCUIT BREAKER IS NORMALLY CLOSED THUS THE FAILURE COULD REMAIN UNDETECTED UNTIL POWERDOWN OF CIRCUIT.

DATE:

1/27/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT:
ABORT:

3/3

MDAC ID: 4052

/NA

ITEM: REMOTE POWER CONTROLLER, RPC 4

FAILURE MODE: INADVERTENT OUTPUT

LEAD ANALYST: ROBINSON

SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IA
- REMOTE MANIPULATOR ARM
- 3) MCIU PRIMARY POWER (MN A)
- 4) FWD POWER CONTROLLER ASSY (MPC) 1
- 5) REMOTE POWER CONTROLLER, 10 AMP
- 6) REMOTE POWER CONTROLLER, RPC 4

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/3	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 81V76A22RPC4

PART NUMBER: MC450-0017-1100

CAUSES: CONTAMINATION, PIECE PART FAILURE STRUCTURAL FAILURE,

MECHANICAL SHOCK, VIBRATION, THERMAL SHOCK.

EFFECTS/RATIONALE:

FAILURE WILL RESULT IN MCIU BEING CONTINUOUSLY POWERED. THIS IS THE NOMINAL CONDITION DURING ON-ORBIT PHASE OF FLIGHT. FAILURE WILL NOT AFFECT OPERATIONS OR BE APPARENT ONBOARD.

DATE:

11/04/86

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT:

3/1R

MDAC ID: 4053

ABORT:

/NA

ITEM:

REMOTE POWER CONTROLLER, RPC 26, 27, 28, 29

FAILURE MODE: OPEN, FAILS TO CLOSE.

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IA
- 2) REMOTE MANIPULATOR ARM
- 3) PORT/STBD HEATER A/B POWER 4) MID POWER CONTROLLER ASSY (MPC)
- 5) REMOTE POWER CONTROLLER, 20 AMP
- 6) REMOTE POWER CONTROLLER, RPC 27

7)

8)

9)

### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFIN	IG: /NA		,

REDUNDANCY SCREENS: A [ ] B [ P ] C [ F ]

LOCATION: 40V76A25RPC27

PART NUMBER: MC450-0017-1200

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION, CORROSION, CONTAMINATION

# EFFECTS/RATIONALE:

LOSS OF ABILITY TO PROVIDE HEATER A (28 VDC MN A) POWER TO PORT REMOTE MANIPULATOR ARM.

LOSS OF HEATER POWER B TO PORT MANIPULATOR ARM COULD RESULT IN LOSS OF MANIPULATOR POSITIONING CAPABILITY, THUS LOSS OF MISSION COULD RESULT.

SUBSEQUENT LOSS COULD CAUSE FROZEN JOINT WHICH COULG RESULT IN UNCOMMANDDE MOTION WHICH COULD RESULT IN LOSS OF CREW/ VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 11/05/86 DATE: 2/1R

FLIGHT:
ABORT: SUBSYSTEM: RMS/EPD&C /NA MDAC ID: 4054

REMOTE POWER CONTROLLER, RPC 30, RPC 31 ITEM:

FAILURE MODE: OPEN, FAILS TO CLOSE.

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

## BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IA
- REMOTE MANIPULATOR ARM 2)
- 3) PORT/STBD BACKUP POWER
- 4) MID POWER CONTROLLER ASSY (MPC)
- 5) REMOTE POWER CONTROLLER, 10 AMP
- 6) REMOTE POWER CONTROLLER, RPC 30, RPC 31

7) 8) 9)

CRITICALITIES

	CKTIICN	MT T T T T T T T T T T T T T T T T T T	
FLIGHT PHASE  PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING:	HDW/FUNC /NA /NA 2/1R /NA /NA	ABORT RTLS: TAL: AOA: ATO:	HDW/FUNC /NA /NA /NA /NA

REDUNDANCY SCREENS: A [ 1 ] B [ F ] C [ P ]

LOCATION: 40V76A26RPC30, 31 PART NUMBER: MC450-0017-1100

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION, CORROSION, CONTAMINATION

### EFFECTS/RATIONALE:

LOSS OF BACKUP (28 VDC MN B) POWER TO PORT/STBD REMOTE MANIPULATOR ARM PRIOR TO START OF ARM DEPLOYMENT WOULD NEGATE USE OF ARM THUS LOSS OF MISSION.

LOSS OF BACKUP POWER PRIOR TO DEPLOYMENT OR WHILE ARM IS IN USE WOULD ABORT OPERATION OF ARM THUS LOSS OF MISSION. LOSS OF BACKUP AFTER LOSS OF PRIMARY WHILE ARM IS IN USE COULD RESULT IN LOSS OF CREW/VEHICLE IF ARM CANNOT BE SAFELY JETTISONED.

DATE:

1/29/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 3/3

MDAC ID: 4175

ABORT:

/NA

ITEM:

SWITCH, S2

FAILURE MODE: PREMATURE OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

## BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) PANEL A8A2
- 4) STBD RMS DEPLOY/STOW
- 5) SWITCH, TOGGLE, MAINTAINED 6) SWITCH. 2-POLE, 2-POS
- 7) SWITCH, S2

8)

9)

### CRITICALITIES

77			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	2/2	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	/NA		/ NA

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 32V73A8A2S2 PART NUMBER: ME452-0102-7201

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

INABILITY TO PROVIDE CONTROL VOLTAGE TO OPERATE THE STOW/DEPLOY ACTUATOR.

INITIAL FAILURE WOULD BE APPARENT ONBOARD FROM EXTENDED AMOUNT OF TIME REQUIRED TO STOW/DEPLOY MPM. RMS OPERATIONS CAN CONTINUE OF SHOULDER HOOK IS ENGAGED.

1/28/88 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 2/1R

MDAC ID: 4176

LEAD ANALYST: ROBINSON

ABORT:

/NA

ITEM:

SWITCH, S2

FAILURE MODE: SHORTS TO GROUND

SUBSYS LEAD: SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) PANEL A8A2
- 4) STBD RMS DEPLOY/STOW
  5) SWITCH, TOGGLE, MAINTAINED
  6) SWITCH. 2-POLE, 2-POS
- 7) SWITCH, S2
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	2/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	• /NA		

LANDING/SAFING: /NA

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 32V73A8A2S2

PART NUMBER: ME452-0102-7201

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

EFFECTS/RATIONALE:

INABILITY TO PROVIDE CONTROL VOLTAGE TO OPERATE THE STOW/DEPLOY ACTUATOR.

LOSS OF OPERATION OF THE STOW/DEPLOY ACTUATOR COULD CAUSE LOSS OF MISSION AND POSSIBLY REQUIRE JETTISON OF THE REMOTE MANIPULATOR ARM IF IT CANNOT BE SAFELY STOWED.

COULD RESULT IN LOSS OF CREW/VEHICLE IF THE ARM CANNOT BE SAFELY JETTISONED.

DATE: 2/24/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: RMS/EPD&C FLIGHT: 3/3

MDAC ID: 4177 ABORT: /NA

RESISTORS, 2W, (6 EACH) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) PEDESTAL DEPLOY/STOW
  4) RESISTORS, CURRENT LIMITING
  5) RESISTORS, 2W, (6 EACH)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

	ONTITUDE I I I I I		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	1/1	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PART NUMBER:

CAUSES: VIBRATION, TEMPERATURE, MECHANICAL SHOCK, OVERVOLTAGE

EFFECTS/RATIONALE:

LOSS OF POSITION OF PEDESTALS INDICATION.

PEDESTAL POSITION IS NOT USED IN SYSTEM LOGIC CONTROL.

DATE:

2/24/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 3/1R

MDAC ID: 4178

ABORT:

/NA

ITEM:

RESISTORS, 1.2 KOHM, 2W, (2 EACH)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON

SUBSYS LEAD: SCHMECKPEPER

## BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) SHOULDER POSITION MICROSWITCHES
- 4) RESISTORS, CURRENT LIMITING
- 5) RESISTORS, 1.2 KOHM, 2W, (2 EACH)

6)

7) 8)

9)

#### CRITICALITIES

	CKITICALITES		
FLIGHT PHASE  PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING:	HDW/FUNC /NA /NA 3/1R /NA /NA	ABORT RTLS: TAL: AOA: ATO:	HDW/FUNC /NA /NA /NA /NA

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

## LOCATION:

PART NUMBER:

CAUSES: VIBRATION, TEMPERATURE, MECHANICAL SHOCK, OVERVOLTAGE

## EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE SYSTEM OF STOW/DEPLOY MICROSWITCHES INDICATING SHOULDER NOT STOWED/DEPLOYED REGARDLESS OF THE ACTUAL SITUATION. THIS WILL ALLOW THE ASSOCIATED MOTOR TO RUN UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF DRIVE AND POWER SWITCHES WILL ALLOW CONTINUOUS MOTOR RUNNING TO STALL/BURNOUT RESULTTING IN LOSS OF MISSION. SUBSEQUENT FAILURE COULD REQUIRE JETTISON OF THE RMS.

IF SAFE JETTISON CANNOT BE PERFORMED THEN LOSS OF CREW/VEHICLE COULD RESULT.

DATE: 2/24/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT:

3/1R

MDAC ID:

4179

ABORT:

/NA

ITEM:

LIMIT SWITCHES (2 EACH)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

## BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) SHOULDER POSITION MICROSWITCHES
- 4) LIMIT SWITCH, DEPLOY SHOULDER
- LIMIT SWITCHES (2 EACH) 5)

6)

7)

8) 9)

CRITICALITIES

ELTAUM DOLL	CRITICALITIES		
FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING	HDW/FUNC /NA /NA 3/1R /NA : /NA	ABORT RTLS: TAL: AOA: ATO:	HDW/FUNC /NA /NA /NA /NA

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION:

PART NUMBER:

CAUSES: VIBRATION, TEMPERATURE, MECHANICAL SHOCK, OVERVOLTAGE

### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE SYSTEM OF STOW/DEPLOY MICROSWITCHES INDICATING SHOULDER NOT STOWED/DEPLOYED REGARDLESS OF THE ACTUAL SITUATION. THIS WILL ALLOW THE ASSOCIATED MOTOR TO RUN UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF DRIVE AND POWER SWITCHES WILL ALLOW CONTINUOUS MOTOR RUNNING TO STALL/BURNOUT RESULTING IN LOSS OF MISSION. SUBSEQUENT FAILURE COULD REQUIRE JETTISON OF THE RMS.

IF SAFE JETTISON CANNOT BE PERFORMED THEN LOSS OF CREW/VEHICLE COULD RESULT.

2/24/88 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 3/2R

MDAC ID: 4180

ABORT:

/NA

ITEM: LIMIT SWITCHES (2 EACH)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) SHOULDER POSITION MICROSWITCHES
- 4) LIMIT SWITCH, DEPLOY SHOULDER
- 5) LIMIT SWITCHES (2 EACH)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/2R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
TANDING/SAFING:	/NA		

LANDING/SAFING: /NA

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: PART NUMBER:

CAUSES: FAILURE/DEFLEXTION OF INTERNAL PART, VIBRATION, CONTAMINATION /FORIEGN OBJECT /DEBRIS

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE SYSTEM OF STOW/DEPLOY MICROSWITCHES INDICATING SHOULDER NOT STOWED/DEPLOYED REGARDLESS OF THE ACTUAL SITUATION. THIS WILL ALLOW THE ASSOCIATED MOTOR TO RUN UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF THE OTHER DEPLOY MICROSWITCH WILL RESULT IN LOSS OF MISSION.

DATE: 2/24/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 3/1R

MDAC ID: 4181

ABORT:

/NA

ITEM:

LIMIT SWITCHES (2 EACH)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) SHOULDER POSITION MICROSWITCHES
- 4) LIMIT SWITCH, STOW SHOULDER
- LIMIT SWITCHES (2 EACH) 5)

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/2R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

#### LOCATION: PART NUMBER:

CAUSES: FAILURE/DEFLEXTION OF INTERNAL PART, VIBRATION, CONTAMINATION /FORIEGN OBJECT /DEBRIS

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE SYSTEM OF STOW/DEPLOY MICROSWITCHES INDICATING SHOULDER NOT STOWED/DEPLOYED REGARDLESS OF THE ACTUAL SITUATION. THIS WILL ALLOW THE ASSOCIATED MOTOR TO RUN UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF THE OTHER DEPLOY MICROSWITCH WILL RESULT IN LOSS OF MISSION.

DATE: 2/24/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: RMS/EPD&C FLIGHT: 3/1R MDAC ID: 4182 ABORT: /NA

ITEM:

LIMIT SWITCHES (2 EACH)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR DEPLOY CONTROL
- 3) SHOULDER POSITION MICROSWITCHES
- 4) LIMIT SWITCH, STOW SHOULDER
- 5) LIMIT SWITCHES (2 EACH)

6)

7)

8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION:
PART NUMBER:

CAUSES: VIBRATION, TEMPERATURE, MECHANICAL SHOCK, OVERVOLTAGE

EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE SYSTEM OF STOW/DEPLOY MICROSWITCHES INDICATING SHOULDER NOT STOWED/DEPLOYED REGARDLESS OF THE ACTUAL SITUATION. THIS WILL ALLOW THE ASSOCIATED MOTOR TO RUN UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF DRIVE AND POWER SWITCHES WILL ALLOW CONTINUOUS MOTOR RUNNING TO STALL/BURNOUT RESULTING IN LOSS OF MISSION. SUBSEQUENT FAILURE COULD REQUIRE JETTISON OF THE RMS. IF SAFE JETTISON CANNOT BE PERFORMED THEN LOSS OF CREW/VEHICLE COULD RESULT.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/19/88 SUBSYSTEM: RMS/EPD&C FLIGHT: 3/3

ABORT: /NA MDAC ID: 4183

RESISTORS, (16 EACH) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IB
- 2) MANIPULATOR POSITIONING MECHANISM
- 3) MPM POSITION INDICATION CIRCUIT
- 4) ISOLATION RESISTORS
- 5) RESISTORS, 5.1 KOHM, 1/4 WATT
- 6) RESISTORS, (16 EACH)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/3	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PART NUMBER:

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION, CORROSION, CONTAMINATION

EFFECTS/RATIONALE:

FAILURE WOULD RESULT IN LOSS OF MPM POISITION INDICATIONS.

DATE: 2/17/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 3/1R MDAC ID: 4345 ABORT: /NA

ITEM: FUSE, F3, F4 FAILURE MODE: FAILS OPEN.

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) FUSE, 1 AMP
- 4) FUSE, F3, F4
- 5)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	3/1R	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING	•		-	

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2F3, F4
PART NUMBER: MC451-0018-0100

CAUSES: MECHANICAL SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

FAILURE OF THE FUSE WILL RESULT IN LOSS OF ABILITY TO DRIVE ONE OF THE MRL MOTORS AT EACH PEDESTAL. SUBSEQUENT FAILURE OF ASSOCIATED FUSE MAY REQUIRE JETTISON OF THE RMS TO PREVENT DAMAGE THAT COULD OCCUR FROM UNRESTRAINED RMS DURING ENTRY.

POSSIBLE LOSS OF CREW/VEHICLE IF THE RMS COULD NOT BE SAFELY JETTISONED.

DATE: 2/17/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 2/1R MDAC ID: 4346 ABORT: /NA

ITEM: SWITCH, S6 FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFIN	IG: /NA		,

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6
PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN LOSS OF ABILITY TO DRIVE THE MRL CAUSING POTENTIAL INABILITY TO RELEASE/RESTRAIN THE RMS.

SUBSEQUENT FAILURE OF MRL LATCHES AFTER RMS IS UNCRADLED COULD REQUIRE JETTISON OF THE RMS.

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

HIGHEST CRITICALITY HDW/FUNC 2/17/88 DATE:

FLIGHT: 2/1R ABORT: /NA SUBSYSTEM: RMS/EPD&C MDAC ID: 4347

SWITCH, S6 ITEM:

FAILURE MODE: FAILS CLOSED (ON)

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6

6)

7)

8) 9)

#### CRITICALITIES

	CVTITCU	111110	
PRELAUNCH:	HDW/FUNC /NA	ABORT RTLS: TAL:	HDW/FUNC /NA /NA
LIFTOFF:	/NA	<del></del>	/NA
ONORBIT:	3/1R	AOA:	,
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	/NA		

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

### EFFECTS/RATIONALE:

FAILURE OF THE SWITCH IN A CLOSED CONDITION WILL RESULT IN CONTINUOUS UNCOMMANDED DRIVING OF THE MRL MOTORS. SUBSEQUENT COMMAND IN OPPOSITE DIRECTION OF FAILURE WILL ENABLE ALL MOTORS TO DRIVE LATCH/RELEASE SIMULTANEOUSLY WHEN MRL IS IN MID TRAVEL

AND POWER CIRCUITT BREAKERS WILL BE BLOWN. FAILURE WILL POSSIBLY RESULT IN LOSS OF MISSION DUE TO INABILITY TO RELEASE THE RMS OR RESTRAIN AS APPROPRIATE. FAILURE WILL REQUIRE JETTISON IF MRL LATTCHES FAIL CLOSED AFTER RMS IS UNCRADELED. THERE IS A

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

DATE: 2/17/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 3/3 MDAC ID: 4348 ABORT: /NA

ITEM: SWITCH, S6 FAILURE MODE: PREMATURE OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/3	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		/ NA

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN INTERMITTENT OPERATION OF THE MRL DURING RELEASE OR LATCH OPERATION.

2/17/88 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C

FLIGHT: 2/1R

MDAC ID: 4349

ABORT:

/NA

ITEM:

FAILURE MODE: PREMATURE CLOSE

SWITCH, S6

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- SWITCH, S6 5)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

PREMATURE CLOSE OF THIS SWITCH WILL ENABLE ALL OF THE MRL MOTORS TO DRIVE LATCH/RELEASE SIMULTANEOUSLY WHEN THE MRL IS IN MID TRAVEL.

SUBSEQUENT FAILURE OF PAYLOAD BAY MECHANICAL POWER SWITCH DURING ASCENT/ENTRY COULD CAUSE UNCOMMANDED UNLATCHING OF THE MRL. THIS COULD RESULT IN LOSS OF CREW/VEHICLE DUE TO UNRESTRAINED RMS MOTION.

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

DATE: 2/17/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 2/1R MDAC ID: 4350 ABORT: /NA

ITEM: SWITCH, S6

FAILURE MODE: CONTACT TO CONTACT SHORT

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6
- 6)
- 7)
- 8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

CONTACT TO CONTACT SHORT IN THE SWITCH WILL RESULT IN CONTINUOUS UNCOMMANDED DRIVING OF THE MRL MOTORS. SUBSEQUENT COMMAND IN OPPOSITE DIRECTION OF FAILURE WILL ENABLE ALL MOTORS TO DRIVE LATCH/RELEASE SIMULTANEOUSLY WHEN MRL IS IN MID TRAVEL

AND POWER CIRCUITT BREAKERS WILL BE BLOWN. FAILURE WILL POSSIBLY RESULT IN LOSS OF MISSION DUE TO INABILITY TO RELEASE THE RMS OR RESTRAIN AS APPROPRIATE. FAILURE WILL REQUIRE JETTISON IF MRL LATTCHES FAIL CLOSED AFTER RMS IS UNCRADELED. THERE IS A

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

DATE: 2/17/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 2/1R MDAC ID: 4351 ABORT: /NA

ITEM: SWITCH, S6 FAILURE MODE: FAILS OPEN

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6

6)

7) 8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	•		-

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN LOSS OF ABILITY TO DRIVE THE MRL CAUSING POTENTIAL INABILITY TO RELEASE/RESTRAIN THE RMS.

SUBSEQUENT FAILURE OF MRL LATCHES AFTER RMS IS UNCRADLED COULD REQUIRE JETTISON OF THE RMS.

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

HIGHEST CRITICALITY HDW/FUNC DATE: 2/17/88

SUBSYSTEM: RMS/EPD&C FLIGHT: 2/1R MDAC ID: 4352 ABORT: /NA

ITEM: SWITCH, S6

FAILURE MODE: POLE TO POLE SHORT

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) MRL LATCH/RELEASE SWITCH
- 4) SWITCH, TOGGLE
- 5) SWITCH, S6

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	3/1R	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING	: /NA		•	
	· ,			

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: 36V73AKA2S6

PART NUMBER: MC452-0102-70203

CAUSES: MECHANICAL/STRUCTURAL MALFUNCTION, SHOCK, VIBRATION,

CORROSION, CONTAMINATION

#### EFFECTS/RATIONALE:

POLE TO POLE SHORT OF THIS SWITCH WILL RESULT IN CONTINUOUS UNCOMMANDED DRIVING OF THE MRL MOTORS. SUBSEQUENT COMMAND IN OPPOSITE DIRECTION OF FAILURE WILL ENABLE ALL MOTORS TO DRIVE LATCH/RELEASE SIMULTANEOUSLY WHEN MRL IS IN MID TRAVEL

AND POWER CIRCUITT BREAKERS WILL BE BLOWN. FAILURE WILL POSSIBLY RESULT IN LOSS OF MISSION DUE TO INABILITY TO RELEASE THE RMS OR RESTRAIN AS APPROPRIATE. FAILURE WILL REQUIRE JETTISON IF MRL LATTCHES FAIL CLOSED AFTER RMS IS UNCRADELED.

POSSIBLITY FOR LOSS OF CREW/VEHICLE IF THE RMS CANNOT BE SAFELY JETTISONED.

HIGHEST CRITICALITY HDW/FUNC 2/24/99

DATE: 3/1R FLIGHT: SUBSYSTEM: RMS/EPD&C /NA ABORT: MDAC ID: 4353

LIMIT SWITCH - LATCHED & RELEASED ITEM:

FAILURE MODE: FAILS OPEN.

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) LOGIC CONTROL CIRCUIT
- 4) POSITION MICROSWITCHES
- 5) LIMIT SWITCH LATCHED & RELEASED

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE PRELAUNCH:	HDW/FUNC /NA	ABORT RTLS:	HDW/FUNC /NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA /NA
DEORBIT: LANDING/SAFING	/NA 3: /NA	ATO:	/ NA

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: PART NUMBER:

CAUSES: FAILURE/DEFLECTION OF INTERNAL PARTS, VIBRATION, CONTAMINATION/FORIEGN OBJECT/DEBRIS

### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE RELEASED MICROSWITCH INDICATING PEDESTAL MRL NOT LATCHED OR RELEASED REGARDLESS OF THE ACTUAL SITUATION.

FAILURE WILL ALLOW THE ASSOCIATED MOTOR DURING MRL OPERATIONS UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF OTHER SWITCH COULD ULTIMATELY LEAD TO MOTOR BURNOUT/STALL. FURTHER FAILURES COULD CAUSE REQUIREMENT TO JETTISON AND POSSIBLY LOSS OF CREW/VEHICLE.

DATE: 2/24/99 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: RMS/EPD&C FLIGHT: 3/1R MDAC ID: 4354 ABORT: /NA

ITEM: LIMIT SWITCH - RELEASE

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

#### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) LOGIC CONTROL CIRCUIT
- 4) POSITION MICROSWITCHES
- 5) LIMIT SWITCH RELEASE
- 6) 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/2R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	/NA		,

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

#### LOCATION:

PART NUMBER:

CAUSES: FAILURE/DEFLECTION OF INTERNAL PARTS, VIBRATION, CONTAMINATION/FORIEGN OBJECT/DEBRIS

#### EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE RELEASED MICROSWITCH INDICATING PEDESTAL MRL NOT LATCHED OR RELEASED REGARDLESS OF THE ACTUAL SITUATION.

FAILURE WILL ALLOW THE ASSOCIATED MOTOR DURING MRL OPERATIONS UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE WILL RESULT IN POSSIBLE LOSS OF MISSION DUE TO LOSS OF ABILITY TO UNCRADLE THE RMS.

HIGHEST CRITICALITY HDW/FUNC 2/24/99 DATE:

FLIGHT: 3/1R ABORT: /NA SUBSYSTEM: RMS/EPD&C MDAC ID: 4355

LIMIT SWITCH - LATCH ITEM:

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: ROBINSON SUBSYS LEAD: SCHMECKPEPER

### BREAKDOWN HIERARCHY:

- 1) RMS, 05-6IC
- 2) MANIPULATOR LATCH CONTROL
- 3) LOGIC CONTROL CIRCUIT
- 4) POSITION MICROSWITCHES
- 5) LIMIT SWITCH LATCHED & RELEASED

6)

7) 8)

9)

CRITICALITIES

	V1(2 = = V		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
	3/1R	AOA:	/NA
ONORBIT:	•	ATO:	/NA
DEORBIT:	/NA	AIO.	,
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION: PART NUMBER:

CAUSES: FAILURE/DEFLECTION OF INTERNAL PARTS, VIBRATION, CONTAMINATION/FORIEGN OBJECT/DEBRIS

EFFECTS/RATIONALE:

FAILURE WILL RESULT IN ONE RELEASED MICROSWITCH INDICATING PEDESTAL MRL NOT LATCHED OR RELEASED REGARDLESS OF THE ACTUAL SITUATION.

FAILURE WILL ALLOW THE ASSOCIATED MOTOR DURING MRL OPERATIONS UNTIL THE COMMAND IS REMOVED.

SUBSEQUENT FAILURE OF OTHER SWITCH COULD ULTIMATELY LEAD TO MOTOR BURNOUT/STALL. FURTHER FAILURES COULD CAUSE REQUIREMENT TO JETTISON AND POSSIBLY LOSS OF CREW/VEHICLE.

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#### APPENDIX F

### NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

This section provides a cross reference between the NASA FMEA and corresponding IOA analysis worksheet(s) included in Appendix E. The Appendix F identifies: NASA FMEA Number, IOA Assessment Number, NASA criticality and redundancy screen data, and IOA recommendations. Appendix F Legend is as follows:

#### Code Definition

- 0 No issue.
- 1 IOA concurs with NASA FMEA/CIL and recommends IOA generate a like FMEA.
- 2 IOA recommends that a NASA FMEA be generated for this failure mode for this component.
- 3 IOA concurs with NASA FMEA/CIL and recommends upgrading the IOA FMEA Crit.
- 4 IOA recommends upgrading the NASA FMEA Crit.
- 5 IOA concurs with NASA FMEA/CIL and recommends downgrading the IOA FMEA Crit.
- 6 IOA recommends downgrading the NASA FMEA Crit.
- 7 Correct the IOA FMEA redundancy screens.
- Correct the NASA FMEA redundancy screens.
- 9. IOA recommends combining the IOA FMEA Failure Modes.
- 10. IOA recommends combining the NASA FMEA Failure Modes.
- 11. IOA recommends combining the IOA FMEA Components.
- 12. IOA recommends combining the NASA FMEA Components.
- 13. Correct typing error in FMEA.
- 14. Disregard this FMEA.
- 15. This FMEA is not a CIL item.

## EPD&C/RMS APPENDIX F (05-61A) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIE	RS	N /	NSA	10A		RECOMMENDATIO	   N S
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER				CREENS	RESOLUTION CODES	     ISSUE
05-61A-2001-1	RMS-4031	3/3		2/2		0, 9, 11	
   05 - 6 I A - 2001 - 1	  RMS-4032	3/3		2/1R   1	NA NA	2, 9, 11	
05-61A-2001-1	  RMS-4033	3/3		3/3		0	 
   05 - 61 A - 2001 - 2	  RMS-4051X	3/3		3/3		0, 1, 14, 15	
  05-61A-2002-1	  RMS-4018	3/1R	PPP	2/2	]	0, 5, 11	
05-61A-2002-1	  RMS-4019	3/1R	PPP	2/1R   1	NA NA	4, 7	
  05-61A-2003-1	RMS-4016	1/1		2/2	.	0, 9, 11	
  05-61A-2003-1	  RMS-4017	1/1		2/1R   1	NA NA	0, 3	
  05-61A-2004-1	RMS-4040	1/1		2/1R   1	NA NA	0, 3, 11	
05-61A-2004-1	RMS-4041	1/1		2/1R   1	NA NA	0, 3, 11	
05-61A-2006-1	  RMS-4028	2/2		2/2		0, 11	
05-61A-2006-1	  RMS-4029	2/2		2/1R	NA NA	2, 9, 11	x
  05-61A-2006-2	  RMS-4030	3/3		3/3		0, 15	·   
   05-61A-2026-1	RMS-4010	2/1R	PFP	2/1R	P P	0, 7, 11	
05-61A-2026-1	  RMS-4011	2/1R	PFP	2/1R	P P	0, 7, 11	
05-61A-2026-1	RMS-4013	2/1R	PFP	2/1R	P P	0, 7, 11	
05-61A-2026-1	  RMS-4014	2/1R	   P F P	2/1R	P P	0, 7, 11	
05-61A-2026-2	RMS-4012	3/1R	PFP	2/2		0, 3, 11	
   05-61A-2026-2	RMS-4015	3/1R	PFP	2/2		0, 7, 11	
05-61A-2028-5		1/1		1/1		0	
  05-61A-2028-6	  RMS-4006	2/1R	PFP	3/3		0, 3	

# EPD&C/RMS APPENDIX F (05-61A Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	N A	SA	01	A	RECOMMENDATI	ONS
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER	CRIT   HW/F	SCREENS	CRIT   HW/F	SCREENS	RESOLUTION CODES	     I S S U E
15-61A-2028-9	RMS-4049X	1/1		1/1		0, 1	
15 - 6 I A - 2028 - X	  RMS-4001	. /		2/2	 	2	x
5-61A-2028-X	  RMS-4003	/		2/2		2	X
5-61A-2028-X	  RMS-4004	/	   	2/2		2	į x
)5-61A-2028-X	RMS-4005	/	 	2/1R	1 NA NA	2	į x
)5-61A-2029-5	RMS-4007	2/1R	l   PFP	2/2	 	0, 3	İ
)5-61A-2029-5	  RMS-4008	1/1	[    -	   1/1 	! [ !	0	j I
15-61A-2029-5	  RMS-4009	   1/1	1	1/1		0	İ
)5-61A-2076-1	  RMS-4020	   2/1R	   P F P	   3/2R 	PP	0, 3, 7, 11	İ
)5-61A-2076-1	   RMS-4021	   2/1R	   P F P	3/2R	PP	0, 3, 7, 11	İ
05-61A-2076-1	   RMS - 4022	   2/1R	P F P	3/2R	P P	0, 3, 7, 11	İ
05-61A-2076-1	RMS-4023	2/1R	P F P	3/2R	P P	0, 3, 7, 11	
05-61A-2076-2	RMS-4050X	3/3	1	3/3	!	0, 1, 14, 15	
05-61A-2078-1	   RMS-4024	3/3		3/3		0, 11, 15 I	Ì
05-61A-2078-1	  RMS-4025	3/3	   	3/3		0, 11, 15	İ
05-61A-2078-1	   RMS-4026	3/3	1	3/3		0, 11, 15	i I
05-61A-2078-1	  RMS-4027	3/3	1	3/3		0, 11, 15	İ
05-61A-2126-1	  RMS-4034	1/1	1	2/2		0, 3, 9, 11	
05-61A-2126-1	RMS-4035	1/1		   2/1R	1 NA NA	0, 3, 9, 11	İ
05-61A-2126-1	   RMS-4037	1/1		2/2	! !	0, 3, 9, 11	İ
05-61A-2126-1	  RMS-4038	1/1		2/1R	1 P P	0, 3, 9, 11	İ

## EPD&C/RMS APPENDIX F (05-61A Concluded) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	I E R S	NASA +			10A				RECOMMENDATIONS		
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER		     sc:	REE	N S	   CRIT   HW/F	     sc	REE	N S	   RESOLUTION   CODES	     1 S S U I
05-61A-2126-2	RMS-4036	2/1R	P	F	P	3/3	<b>+</b> !	• • •		0, 3, 11	
05-61A-2126-2	RMS-4039	2/1R	   P	F	P	3/3	 			   0, 3, 11	
05-61A-2176-1	RMS-4042	2/1R	   P	F	P	   3/2R	 	P	P	   0, 3, 11	
05-61A-2176-1	RMS-4043	2/1R	P	F	P	   3/2R	 	P	P	0, 3, 11	1
05-61A-2176-1	RMS-4047	2/1R	   P	F	P	   3/2R	! !	P	P	   0, 3, 11	1
D5-61A-2176-1	RMS-4048	2/1R	   P 	F	P	   3/2R	 	P	P	0, 3, 11	
05-61A-2176-2	RMS-4053X	3/1R	   P	F	P	   3/1R		P	F	0, 1	
05-61A-2178-1	RMS-4044	1/1	<u> </u>			2/2	<u> </u>			0, 3	
05-61A-2178-2	RMS-4052X	3/3				3/3				0, 1, 14, 15	 
05-61A-2179-1	RMS-4045	3/1R	P	P	P	2/1R	1	N A	NA	4, 11	   x
05-61A-2179-1	RMS-4046	3/1R	P	P	P	2/1R	1	N A	N A	4, 11	   x
05-61A-2179-2	  RMS-4054X	2/1R	   P	F	P	2/1R	1	F	P	0, 1	1

## EPD&C/RMS APPENDIX F (05-61B) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

   IDENTIFIE	   RS	N A	SA	10	IA	RECOMMENDATIONS	   
	  ASSESSMENT   IOA NUMBER			   CRIT     HW/F		RESOLUTION   CODES   I	SSUE
05-61B-MPM-1	RMS-4109	3/1R	PPP	3/2R	РР	0, 3, 11	
  05-61B-MPM-1	  RMS-4110	3/1R	P P P	3/2R	P P	0, 3, 11	
05-61B-MPM-1	  RMS-4111	3/1R	P P P	3/2R	РР	0, 3, 11	
  05-61B-MPM-1	  RMS-4112	3/1R	PPP	3/2R	P P	0, 3, 11	
   05 - 61B - MPM - 2A	  RMS-4105	2/1R	P P P	2/2		0,3,11	
  05-618-MPM-2A	  RMS-4107	   2/1R	PPP	   2/2		0, 3, 11	
05-61B-MPM-2B	   RMS-4106	1/1	PPP	   1/1		0, 10, 12	
  05-618-MPM-28	  RMS-4108A	1/1	PPP	   1/1		0, 10, 12	
  05-61B-MPM-2B, D,	   RMS-4108	1/1	PPP	   1/1		0, 10, 12	
05-61B-MPM-2C	   RMS - 4175X	3/3	PPP	3/3		0, 1, 8, 15	
05-618-MPM-2D	  RMS-4108B	1/1	   P P P	1/1		0, 10, 12	
  05-618-MPM-2E	  RMS-4108C	1/1	PPP	1/1	 	0, 10, 12	
  05-618-MPM-2F	   RMS-4176X	   2/1R	P P P	   2/1R	   1 P P	0, 1	
   05-618-MPM-2G	   RMS-4108D	1/1	P P P	   1/1		0, 10, 12	
05-61B-MPM-4	  RMS-4113	3/1R	PPP	   3/2R	   PP	0, 3, 9, 11	
   05-618-MPM-4	  RMS-4115	   3/1R	   P P P	   3/2R	   PP	0, 3, 9, 11	
05-618-MPM-4	  RMS-4117	3/1R	   P P P	   3/2R	   PP	0, 3, 9, 11	
   05-618-MPM-4	  RMS-4119	   3/1R	   P P P	   3/2R	   PP	0, 3, 9, 11	
  05-618-MPM-4	  RMS-4121	   3/1R	   P P P	   3/2R	   P P	0, 3, 9, 11	
   05-618-MPM-4	  RMS-4123	   3/1R	   P P P	3/2R	   PP	0, 3, 9, 11	
   05-618-MPM-4	  RMS-4125	   3/1R	   P P P	   3/2R	   PP	0, 3, 9, 11	
					 <b>.</b>	++-	

## EPD&C/RMS APPENDIX F (05-61B Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIE	RS	N/	A S A	A01		RECOMMENDATIO	NS
·	ASSESSMENT		•		REENS	RESOLUTION CODES	 
05-618-MPN-4	RMS-4127	3/1R	P P P	3/2R	P P	0, 3, 9, 11	
   05-618-MPM-5	  RMS-4114	1/1	   N N N	1/1		0, 11	
   05 - 6 I B - M P M - 5	  RMS-4116	1/1	   N N N	1/1		0, 11	 
05-61B-MPM-5	  RMS-4118	1/1	   N N N	1/1	İ	0, 11	 
05-61B-MPM-5	  RMS-4120	1/1	N N N	1/1		0, 11	
05-61B-MPM-5	  RMS-4122	1/1	N N N	1/1		0, 11	
   05 - 6 I B - MPM - 5	  RMS-4124	1/1	N N N	1/1		0, 11	 
   05 - 6   B - MPM - 5	  RMS-4126	1/1	   N N N	1/1		0, 11	] ! !
   05 - 6   B - MPM - 5	  RMS-4128	1/1	N N N	1/1		0, 11	
   05 - 6   B - MPM - 5 A	RMS-4177X	3/3		3/3		0, 1, 8, 15	 
   05 - 6   B - MPM - 6	  RMS-4178X	3/1R	PPP	3/1R   1	P P	0, 1	
  05-618-MPM-7	  RMS-4179X	3/1R	PPP	3/1R   1	PP	0, 1	
   05 - 6   B - M P M - 7 A	  RMS-4180X	3/1R	PPP	3/2R   1	PP	0, 1	!   !
   05 - 6   B - MPM - 8	  RMS-4181X	3/1R	PPP	3/1R   1	PP	0, 1	 
   05 - 6   B - MPM - 8 A	  RMS-4182X	3/1R	PPP	3/1R   1	PP	0, 1	
   05 - 6   B - MPM - 10	  RMS-4129	3/3	   N N N	3/3	 	0, 11, 15	! !
   05 - 6   B - MPM - 10		3/3	N N N	3/3	1	0, 11, 15	!!!!
   05 - 61B - MPM - 10	RMS-4131	3/3	   N N N	3/3	! [	0, 11, 15	
   05 - 6   B - MPM - 10	  RMS-4132	3/3	N N N	3/3	 	0, 11, 15	
   05 - 6   B - MPM - 10	  RMS-4133	3/3	N N N	3/3	1	0, 11, 15	
   05 - 6 I B - M P M - 1 0 		3/3		3/3		0, 11, 15	
1			 	 ·	 • •		 

## EPD&C/RMS APPENDIX F (05-61B Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	N /	\SA }	IOA +	RECOMMENDATIONS
NASA FMEA NUMBER	ASSESSMENT		•	CRIT     CRIT     HW/F   SCREENS	RESOLUTION   CODES   ISSUE
05-61B-MPM-10	RMS-4135	3/3	N N N	3/3	0, 11, 15
05-61B-MPM-10	  RMS-4136	3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-10	  RMS-4137	3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-10	  RMS-4138	3/3	   N N N		0, 11, 15
05-61B-MPM-10	  RMS-4139	3/3	   N N N		0, 11, 15
05-61B-MPM-10	RMS-4140	3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-10	  RMS-4141	3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-10	RMS-4142	3/3	   N N N		0, 11, 15
05-61B-MPM-10	RMS-4143	3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-10	   RMS-4144	   3/3	   N N N	3/3	0, 11, 15
05-61B-MPM-11	  RMS-4183X	   3/3	I INNN		0, 1, 15

## EPD&C/RMS APPENDIX F (05-61B Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIES	≀s	N /	NSA	10	DA	RECOMMENDATI	   D N S
NASA   FMEA NUMBER	ASSESSMENT				SCREENS	RESOLUTION CODES	I S S U E
REFER TO EPD&C	BASIC FOR TH	IE FOLLO	DWING FMEAS	5 I			
EPD&C 05-6-2613-1	  RMS-4153	/		3/2R	NA NA	14	
EPD&C 05-6-2613-1	RMS-4155	/		3/2R	NA NA	14	
  EPD&C 05-6-2613-2	RMS-4154	/		3/3	 	14	
  EPD&C 05-6-2613-2	RMS-4156	/		3/3		14	
  EPD&C 05-6-2614-1	  RMS-4151	/		3/2R	HA HA	14	
  EPD&C 05-6-2614-2	  RMS-4152	/		3/3		14	
  EPD&C 05-6-2615-1	RMS-4147	/		3/2R	NA NA	14	
  EPD&C 05-6-2615-1	RMS-4149	/		3/2R	NA NA	1 4	
  EPD&C 05-6-2615-2	RMS-4148	/		3/3		14	
  EPD&C 05-6-2615-2	RMS-4150	/		3/3		1 4	
  EPD&C 05-6-2616-1	RMS-4145	/		3/2R	NA NA	1 4	
  EPD&C 05-6-2616-2	RMS-4146	/		3/3		1 4	
  EPD&C 05-6-2653-1	RMS-4159	/		3/2R	NA NA	1 4	
  EPD&C 05-6-2653-1		/   /		3/2R	NA NA	1 4	
  EPD&C 05-6-2653-2	  RMS-4157	/ !		3/2R	NA NA	14	
  EPD&C 05-6-2653-2	  RMS-4161	/	 	3/2R	NA NA	14	
  EPD&C 05-6-2653-2	RMS-4163	/	[ •	3/2R	NA NA	14	
EPD&C 05-6-2653-2	RMS-4165	/	   	3/2R	NA NA	14	
  EPD&C 05-6-2653-2	RMS-4166	/	i !	3/3	 	14	
EPD&C 05-6-2653-2	RMS-4168	/	! ! :	3/3		14	
  EPD&C 05-6-2654-1	RMS-4160	/	<u> </u>	3/3		14	

## EPD&C/RMS APPENDIX F (05-61B Concluded) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIE	R S	NASA		   IOA		RECOMMENDATIONS	
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER	CRIT   HW/F	     screens		SCREENS	RESOLUTION CODES	    1\$\$UE
EPD&C 05-6-2653-2	RMS-4163	/		3/2R	NA NA	14	
EPD&C 05-6-2653-2	  RMS-4165	/	 	3/2R	NA NA	14	
EPD&C 05-6-2653-2	  RMS-4166	   /	 	3/3		1 4	
EPD&C 05-6-2653-2	  RMS-4168	/	1    -	3/3		14	
EPD&C 05-6-2654-1	   RMS-4160	   /	   	   3/3 		14	
EPD&C 05-6-2655-1	  RMS-4162	/	 	   3/3 	 	14	1
EPD&C 05-6-2655-1	  RMS-4164	   /	    -	3/3	!   	14	
EPD&C 05-6-2656-1	   RMS-4158	   /	!   	   3/3 	   	14	
EPD&C 05-6-2658-1	  RMS-4101	!   /	1	2/1R	   1 P P	14	İ
EPD&C 05-6-2658-1	  RMS-4103	/	! [	2/1R	   1 P P	14	
EPD&C 05-6-2658-2	RMS-4102	/	i   	3/3	:   	   14	
EPD&C 05-6-2658-2	  RMS-4104	!   /	 	3/3	i   	14	
EPD&C 05-6-2703-1	   RMS-4172	   /	1	   3/2R	I   NA NA	   14 	
  EPD&C 05-6-2703-1	  RMS-4174	!   /	1	   3/2R	I ] NA NA I	   14 	
  EPD&C 05-6-2704-1	RMS-4170	   /		3/2R	I   NA NA I	14	
  EPD&C 05-6-2705-1	   RMS-4171	   /		3/2R	NA NA	14	
EPD&C 05-6-2705-1	  RMS-4173	/	1	3/2R	I NA NA	   14 	
  EPD&C 05-6-2706-1	   RMS-4169	/	1	3/2R	NA NA	1 4	İ

## EPD&C/RMS APPENDIX F (05-6IC) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	   I E R S	N /	A S A +	   I(	DA	   RECOMMENDATION	IS
NASA FMEA NUMBER	ASSESSMENT		•	   CRIT   HW/F	•	RESOLUTION CODES	ISSUE
05-61C-MRL-1	RMS-4345X	3/1R	P P P	3/1R	1 P P	0, 1	
05-61C-MRL-2A	RMS-4346X	2/1R	   P P P 	   2/1R	   1 P P	0, 1, 10	
05-61C-MRL-2B	RMS-4349X	2/1R	!   P P P !	   2/1R 	   1 P P	0, 1, 10	
05-61C-MRL-2C	RMS-4352X	3/3	   P P P 	   3/3	1	0, 1, 15	
05-61C-MRL-2D	RMS-4350X	2/1R	   P P P	   2/1R	   1 P P	0, 1, 10	
05-61C-MRL-2E	RMS-4347X	2/1R	   P P P	   2/1R	   1 P P	0, 1, 10	
05-61C-MRL-2F	  RMS-4348X	2/1R	   P P P	   2/1R 	   1 P P	0, 1, 10	
05-61C-MRL-2G	RMS-4351X	2/1R	   P P P 	   2/1R 	   1 P P	0, 1, 10	
05-61C-MRL-4	RMS-4201	3/1R	   P P P	] 3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	RMS-4203	3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	RMS-4205	3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	RMS-4207	3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	RMS-4235	3/1R	   P P P	] 3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	RMS-4237	3/1R	   P P P	   3/2R	I NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	  RMS-4239	3/IR	   P P P	3/2R	I NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	  RMS-4241	3/IR	   P P P	3/2R	I NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	  RMS-4257	3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	   RMS-4259	3/1R	   P P P	3/2R	I NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	  RMS-4261	3/1R	   P P P	   3/2R	   NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	   RMS-4263	3/1R	   P P P	   3/2R	   NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	  RMS-4279	   3/1R	   P P P	   3/2R	NA NA	   0, 3, 7, 9, 11 1	

EPD&C/RMS APPENDIX F (05-61C Cont'd)
NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	N A	SA	10	) }	RECOMMENDATION	IS 
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER		SCREENS	CRIT   HW/F	SCREENS	RESOLUTION CODES	    ISSUE
 05-61C-MRL-4	RMS-4281	3/1R	PPP	3/2R	AA AA	0, 3, 7, 9, 11 1	 
05-61C-MRL-4	  RMS-4283	3/1R	PPP	3/2R	I NA NA	0, 3, 7, 9, 11 1	!   
05-61C-MRL-4	  RMS-4285	3/1R	P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	!   
05-61C-MRL-4	  RMS-4301	3/1R	   P P P	   3/2R 	NA NA	0, 3, 7, 9, 11 1	)   
05-61C-MRL-4	  RMS-4303	3/1R	   P P P	   3/2R	NA NA	   0, 3, 7, 9, 11 1	! !
05-61C-MRL-4	   RMS - 4305	   3/1R	   P P P	   3/2R	NA NA	   0, 3, 7, 9, 11 1 	   
05-61C-MRL-4	  RMS-4307	3/1R	PPP	1   3/2R	I   NA NA	   0, 3, 7, 9, 11 1	
05-61C-MRL-4	   RMS-4323	3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	   RMS-4325	   3/1R	   P P P	   3/2R	. NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-4	   RMS-4327	   3/1R	PPP	   3/2R	NA NA	0, 3, 7, 9, 11 1	! !
05-61C-MRL-4	   RMS-4329	   3/1R	P P P	3/2R	HA NA	0, 3, 7, 9, 11 1	1
05-61C-MRL-5	   RMS-4202	   3/1R	   P P P	3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-5	   RMS-4204	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-5	   RMS - 4236	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	
05-61C-MRL-5	   RMS-4238	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11 1	1
05-61C-MRL-5	   RMS-4258	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11	     
   05 - 61C - MRL - 5	   RMS-4260	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11	   [ 
  05-61C-MRL-5	   RMS-4280	   3/1R	   P P P	   3/2R	I NA NA	0, 3, 7, 9, 11	1
05-61C-MRL-5	   RMS-4282	   3/1R	PPP	3/2R	NA NA	0, 3, 7, 9, 11	1
  05-610-MRL-5	   RMS-4302	   3/1R	   P P P	   3/2R	NA NA	0, 3, 7, 9, 11	1
 	  RMS-4304	   3/1R	   P P P	   3/2R	NA NA	   0, 3, 7, 9, 11	1 1

## EPD&C/RMS APPENDIX F (05-61C Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	   N +	ASA +	   10A	 	RECOMMENDATIO	<b>1</b> S
NASA FMEA NUMBER	  ASSESSMENT  IOA NUMBER	•	•		ENS	RESOLUTION CODES	     I S S U E
05-61C-MRL-5	RMS-4324	3/1R	P P P	3/2R   N	A HA	0, 3, 7, 9, 11 1	• • • • • • • • • • • • • • • • • • •
05-61C-MRL-5	RMS-4326	   3/1R	PPP	3/2R   N	A NA	0, 3, 7, 9, 11 1	
05-61C-MRL-6	RMS-4206	   2/1R	  PFP	3/2R   N	A NA	0, 3, 7, 9, 11	
05-61C-MRL-6	RMS-4208	   2/1R	   P F P	3/2R   N	A NA	0, 3, 7, 9, 11	
05-61C-MRL-6	RMS-4240	2/IR	PFP	3/2R   N	   A NA	0, 3, 7, 9, 11	
05-61C-MRL-6	  RMS-4242	2/1R	   P F P	3/2R   N	   A NA	0, 3, 7, 9, 11	
05-61C-MRL-6	RMS-4262	2/1R	PFP	3/2R   N	   A H A	0, 3, 7, 9, 11	
05-61C-MRL-6	  RMS-4264	2/1R	PFP	3/2R N	I A NA	0, 3, 7, 9, 11	
05-61C-MRL-6	RMS-4284	2/1R	   P	3/2R N	A HA	0, 3, 7, 9, 11	
  05-61C-MRL-6	RMS-4286	2/1R	PFP	3/2R   N	   A H A	0, 3, 7, 9, 11	
  05-61C-MRL-6	RMS-4306	2/1R	PFP	3/2R   N	A NA	0, 3, 7, 9, 11	
  05-61C-MRL-6	RMS-4308	2/1R	P F P	3/2R N	A NA	0, 3, 7, 9, 11	
   05-61C-MRL-6	RMS-4328	2/1R	PFP	3/2R   N	A NA	0, 3, 7, 9, 11	
  05-61C-MRL-6	RMS-4330	2/1R	P F P	3/2R   N	I LANA	0, 3, 7, 9, 11	
  05-61C-MRL-7	RMS-4217	3/1R	P P P	3/3		0, 3, 7, 9, 11	
  05~61C-MRL-7	  RMS-4218	3/1R	P P P	3/3	1	0, 3, 7, 9, 11	
  05-61C-MRL-7		3/1R	P P P	3/2R   N	   A N A	0, 3, 7, 9, 11	
  05-61C-MRL-7		3/1R	P P P	3/2R   N/	   A N A	0, 3, 7, 9, 11	
   05-61C-MRL-7	  RMS-4273	3/1R	P P P	3/2R   N/	  A	0, 3, 7, 9, 11	
   05-61C-MRL-7	  RMS-4274	3/1R	P P P	3/2R   N/	NA	0, 3, 7, 9, 11	
   05 - 61C - MRL - 7	  RMS-4295	3/1R	P P P		Ī	0, 3, 7, 9, 11	

## EPD&C/RMS APPENDIX F (05-61C Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF1	  ERS	N /	ASA	104	RECOMMENDATION	ıs 
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER			CRIT   HW/F   SCREENS	   RESOLUTION     CODES	ISSUE
05-61C-MRL-7	RMS-4296	3/1R	PPP	3/2R   NA NA	0, 3, 7, 9, 11	
05-61C-MRL-7	RMS-4317	3/1R	PPP	3/2R   NA NA	0, 3, 7, 9, 11	
05-61C-MRL-7	  RMS-4318	3/1R	P P P	3/2R NA NA	0, 3, 7, 9, 11	
05-61C-MRL-7	  RMS-4339	3/1R	   P P P	3/2R	0, 3, 7, 9, 11	
05-61C-MRL-7	  RMS-4340	3/1R	I I P P P	3/2R   NA NA	0, 3, 7, 9, 11	
   05-61C-MRL-7A	  RMS-4211	3/1R	   P P P	   3/3	0, 3, 7, 9, 11	 
   05-61C-MRL-7A	  RMS-4212	3/1R	   P P P	3/3	0, 3, 7, 9, 11	   
  05-61C-MRL-7A	RMS-4245	3/1R	   P P P	3/3	0, 3, 7, 9, 11	   
   05 - 61C - MRL - 7A	RMS-4246	3/1R	   P P P	3/3	0, 3, 7, 9, 11	!   
   05 - 61C - MRL - 7A	RMS-4267	   3/1R	   P P P	3/3	0, 3, 7, 9, 11	
   05 - 61C - MRL - 7A	RMS-4268	3/1R	  - P	3/3	0, 3, 7, 9, 11	! 
   05 - 6 I C - MR L - 7 A	  RMS-4289	3/1R	l   P P P	3/3	0, 3, 7, 9, 11	 
   05-61C-MRL-7A	   RMS - 4290	   3/1R	   P P P  -	3/3	0, 3, 7, 9, 11	!   
   05-61C-MRL-7A	   RMS-4311	   3/1R	   P P P	3/3	0, 3, 7, 9, 11	}   
   05-61C-MRL-7A	   RMS-4312	   3/1R	   P P P	3/3	0, 3, 7, 9, 11	!   !
   05-610-MRL-7A	   RMS-4333	   3/1R	   P P P	3/3	0, 3, 7, 9, 11	!   
   05-610-MRL-7A	   RMS - 4334	]   3/1R	   P P P	3/3	0, 3, 7, 9, 11	 
   05 - 6 I C - MR L - 8	  RMS-4628	   3/1R  -	   P P P		0, 1	i   
  05-610-MRL-9	  RMS-4429	   3/2R	   P P P		0, 1	1
  05-61C-MRL-10	  RMS-4630	   3/1R	   P P P		0, 1	
   05 - 6 I C - M R L - 1 1	   RMS - 4219	   3/3	   N N N	3/3	0, 9, 11, 15	1

## EPD&C/RMS APPENDIX F (05-61C Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	N /	ASA +	   I	DA +	RECOMMENDAT	IONS
	  ASSESSMENT   IOA NUMBER		<u>.</u>		•	RESOLUTION CODES	  -   I S S U E
05-61C-MRL-11	RMS-4220	3/3	<u>,                                      </u>	3/3		0, 9, 11, 15	
)5-61C-MRL-11	RMS-4221	3/3	 	3/3	[   	   0, 9, 11, 15	
)5-61C-MRL-11	RMS-4222	3/3	!   	   3/3		0, 9, 11, 15	
15-61C-MRL-11	RMS-4223	3/3	   	   3/3		0, 9, 11, 15	
)5-61C-MRL-11		3/3	   	   3/3 	 	!   0, 9, 11, 15	
05-61C-MRL-11		3/3	   	   3/3 	 	0, 9, 11, 15	
05-61C-MRL-11		3/3	 	   3/3 		0, 9, 11, 15	
05-61C-MRL-11	RMS-4227	3/3		3/3	i   	0, 9, 11, 15	
)5-61C-MRL-11	RMS-4228	3/3	1 1 1	3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4229	3/3		3/3		0, 9, 11, 15	
)5-61C-MRL-11	RMS-4230	3/3	! 	3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4231	3/3	# # #	3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4232	3/3		3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4233	3/3	1   	   3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4234	3/3	1	   3/3 	   	   0, 9, 11, 15 	1
05-61C-MRL-11	RMS-4253	3/3	1   	3/3	   	0, 9, 11, 15	   
05-61C-MRL-11	RMS-4254	3/3	   	3/3		0, 9, 11, 15	
05-61C-MRL-11	RMS-4255	3/3	1   	3/3		0, 9, 11, 15	!   
)5-61C-MRL-11	RMS-4256	3/3	   	3/3		0, 9, 11, 15	   
15-61C-MRL-11	RMS-4275	3/3	1   	3/3		0, 9, 11, 15	
)5-61C-MRL-11	RMS-4276	3/3	! 	3/3		   0, 9, 11, 15	I I

## EPD&C/RMS APPENDIX F (05-61C Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIERS		NASA		   001		   RECOMMENDATIONS	
NASA FMEA NUMBER	ASSESSMENT	CRIT   HW/F		CRIT HW/F		RESOLUTION CODES	    ISSUE
05-61C-MRL-11	RMS-4277	3/3		3/3		0, 9, 11, 15	
05-61C-MRL-11	  RMS-4278	3/3		   3/3	   	0, 9, 11, 15	
   05-61C-MRL-11	  RMS-4297	3/3		   3/3	   	   0, 9, 11, 15	
   05-61C-MRL-11	  RMS-4298	3/3		   3/3	 	   0, 9, 11, 15 	 
   05-61C-MRL-11	  RMS-4299	3/3		   3/3 	!   	   0, 9, 11, 15 	
   05-61C-MRL-11	  RMS-4300	3/3	!    -	3/3	! 	!   0, 9, 11, 15 	
   05-61C-MRL-11	  RMS-4319	3/3	 	   3/3		   0, 9, 11, 15 	
   05 - 61C - MRL - 11	  RMS-4320	3/3	    -	3/3	 	0, 9, 11, 15	
   05-61C-MRL-1 <sub>.</sub> 1	RMS-4321	   3/3	! 	3/3	!   	0, 9, 11, 15	
  05-61C-MRL-11	   RMS-4322	3/3	 	3/3	1	0, 9, 11, 15	
05-61C-MRL-11	  RMS-4341	   3/3	! 	3/3	1	0, 9, 11, 15	İ
05-61C-MRL-11	   RMS-4342	   3/3		3/3	   	0, 9, 11, 15	i
   05-61C-MRL-11	   RMS-4343	   3/3	1	3/3		0, 9, 11, 15	İ
   05-61C-MRL-11	   RMS - 4344	3/3	1	3/3		0, 9, 11, 15	
  05-610-MRL-12	  RMS-4213	   3/3	N N N	3/3		0, 9, 11, 15	
  05-61C-MRL-12	  RMS-4214	3/3	N N N	3/3		0, 9, 11, 15	
  05-610-MRL-12	   RMS - 4215	   3/3	   N N N	3/3		0, 9, 11, 15	
  05-61C-MRL-12	  RMS-4216	3/3	   N N N	3/3	 	0, 9, 11, 15	
  05-61C-MRL-12	RMS-4247	3/3	N N N	3/3	   	0, 9, 11, 15	
  05-61C-MRL-12	RMS-4248	3/3	   N N N	3/3	! 	0, 9, 11, 15	
  05-61C-MRL-12	   RMS-4249	   3/3	   N N N	3/3	1	0, 9, 11, 15	

## EPD&C/RMS APPENDIX F (05-61C Concluded) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	ENTIFIERS		NASA		DA 	RECOMMENDATION	
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER		!	CRIT	SCREENS	   RESOLUTION   CODES	     1 \$ \$ U E
05-61C-MRL-12	RMS-4250	3/3	N N N	3/3		0, 9, 11, 15	<u> </u>
05-61C-MRL-12	RMS-4269	3/3	   N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	  RMS-4270	3/3	   N N N	   3/3		0, 9, 11, 15	
05-61C-MRL-12	  RMS-4271	3/3	N N N	3/3		0, 9, 11, 15	1
05-61C-MRL-12	  RMS-4272	3/3	   N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4291	3/3	N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4292	3/3	N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4293	3/3	N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4294	3/3	N N N	3/3		0, 9, 11, 15	
15-61C-MRL-12	RMS-4313	3/3	N N N	3/3		0, 9, 11, 15	!
05-61C-MRL-12		3/3	N N N	3/3		0, 9, 11, 15	 
05-61C-MRL-12	RMS-4315	3/3	N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4316	3/3	N N N	3/3	1	0, 9, 11, 15	
05-61C-MRL-12	RMS - 4335	3/3	N N N	3/3		0, 9, 11, 15	
05-61C-MRL-12	RMS-4336	3/3	: N N N	3/3	! !	0, 9, 11, 15	
)5-61C-MRL-12		3/3	N N N	3/3	; 	0, 9, 11, 15	<u> </u>
05-61C-MRL-12	RMS-4338	3/3	N N N	3/3	! !	0, 9, 11, 15	1

## EPD&C/RMS APPENDIX F (05-61D1) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIE	Rs	N A	A S A	10	) <b>A</b>	RECOMMENDATION	s
	  ASSESSMENT   IOA NUMBER		SCREENS	   CRIT     HW/F		RESOLUTION   CODES	     ISSUE
05-6ID-2002-1	RMS-4526	1/1		2/1R	1 P P	0, 3, 11	į
05-61D-2002A-1	  RMS-4530	2/1R	PFP	   2/1R	1 P P	0, 7, 11	
  05-610-2026-1	  RMS-4521	1/1	<b>!</b> 	3/3		0, 3, 11	ļ
   05 - 6 I D - 2027 - 1	  RMS-4507	1/1		   1/1		0, 11	į
05-61D-2027-2	  RMS-4508	2/1R	   P F P	   2/1R	1 P P	0, 7, 11	1
  05-61D-2028-1	  RMS-4511	1/1	   	1/1		0, 11	i
05-61D-2028-2	  RMS-4512	2/1R	   P F P	   2/1R	1 P P	0, 7, 11	
   05-610-2029-1	  RMS-4515	1/1	 	1/1		0, 11	į
05-61D-2029-2	  RMS-4516	2/1R	   P F P 	2/1R	   1 P P	0, 7, 11	
05-61D-2030-1	  RMS-4519	1/1	!   !	1/1		0, 11	1
05-610-2030-2	  RMS-4520	2/1R	   P F P	2/1R	   1 P P	,   0, 7, 11	
05-6ID-2031-1	   RMS-4503	1/1	i    -	1/1	   	0, 11	1
   05-610-2126-1	  RMS-4265	2/1R	   P P P	3/2R	I NA NA	0, 3, 7, 11	
  05-610-2126-1	   RMS - 4331	2/1R	   P P P	3/2R	I.   NANA	0, 3, 7, 11	
   05-610-2127-1	  RMS-4243	   2/1R	   P P P	3/2R	I   NA NA	0, 3, 7, 11	
05-610-2127-1	  RMS-4309	   2/1R	   P P P	   3/2R	I NA NA	   0, 3, 7, 11	   
05-6ID-2128-1	  RMS-4209	]   2/1R	   P P P	3/2R	NA NA	   0, 3, 7, 11	 
05-6ID-2128-1	  RMS-4287	   2/1R	   p	3/2R	I   NA NA		! }
05-610-2500-1	RMS-4574	   2/1R	   P F P	   2/1R	   1 P P	0, 7, 11	   
05-610-2500-1	  RMS-4576	   2/1R	   P F P	   2/1R	   1 P P	   0, 7, 11	   
   05-61D-2501-1	  RMS-4550	   2/1R	   P F P	   2/1R	   1 P P	1	; 

#### EPD&C/RMS APPENDIX F (05-6ID1 Concluded) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIERS		NASA		   10A +		RECOMMENDATIONS	
NASA FMEA NUMBER	ASSESSMENT		<u>.</u>	CRIT		RESOLUTION CODES	    188UE
05-610-2501-1	RMS-4552	2/1R	PFP	2/1R	1 P P	0, 7, 11	
05-61D-2502-1	RMS-4568	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	ļ
05-6ID-2502-1	  RMS-4570	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	1
05-6ID-2503-1	RMS-4544	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	1
05-6ID-2503-1	  RMS-4546	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	
05-6ID-2504-1	  RMS-4562	2/1R	   P F P	2/1R	   1 P P	0, 7, 11	
05-61D-2504-1	  RMS-4564	2/1R	   P F P	2/1R	   1 P P	0, 7, 11	
05-6ID-2505-1	RMS-4538	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	1
05-6ID-2505-1	RMS-4540	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	
05-6ID-2506-1	  RMS-4556	2/1R	   P F P	2/1R	   1 P P	   0, 7, 11	,
05-61D-2506-1	  RMS-4558	2/1R	   P F P	   2/1R	   1 P P	   0, 7, 11	
   05-610-2507-1	  RMS-4532	2/1R	   P F P	   2/1R	   1 P P	   0, 7, 11	
   05-61D-2507-1	  RMS-4534	2/1R	   P F P	   2/1R	   1 P P	   0, 7, 11	l I

## EPD&C/RMS APPENDIX F (05-6ID2) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIERS		NASA		A01		RECOMMENDATIONS	
NASA FMEA NUMBER	  ASSESSMENT   10a NUMBER	CRIT   HW/F		CRIT   HW/F	SCREENS	RESOLUTION CODES	    188UE
05-6ID-2001-1	RMS-4523	3/3	HA NA NA	3/3		0, 13, 15	i 1
05-610-2002-2	  RMS-4527	3/3	PPP	3/3		0, 11, 15	i
05-61D-2002-2	  RMS-4531	3/3	PPP	3/3		0, 11, 15	
05-61D-200 <b>3-</b> 1	  RMS-4524	2/1R	PPP	2/1R	1 P P	0, 11	
05-6ID-2003-1	  RMS-4528	2/1R	PPP	2/1R	1 P P	0, 11	
05-610-2003-2	   RMS-4525	3/3	P P P	3/3		0, 11, 15	
05-61D-2003-2	   RMS - 4529	3/3	   P P P	   3/3	] 	0, 11, 15	
05-610-2026-2	   RMS-4522	   3/2R	]   NA NA NA	   3/2R	   1 P P	0, 11	
05-6ID-2031-2	   RMS-4504	   3/1R	   P P P	   2/1R	   1 P P	0, 5, 11	į
05-610-2032-1	   RMS-4505	   1/1	   P P P	   1/1	 	0, 11	İ
05-610-2032-2	   RMS-4506	   3/1R	   P P P	   2/1R	   1 P P	0, 5, 11	į
05-6ID-2033-1	   RMS-4509	1/1	PPP	1/1		!   0, 11 !	İ
05-610-2033-2	   RMS-4510	3/1R	PPP	2/1R	   1 P P	0, 5, 11	Ì
05-6ID-2034-1	  RMS-4513	1/1	   P P P	1/1		;   0, 11	
05-61D-2034-2	  RMS-4514	   3/1R	   P P P	   2/1R	   1 P P	0, 5, 11	i
   05 - 6 I D - 2 O 3 5 - 1	  RMS-4517	1/1	   P P P	1/1	1	1   0, 11 	i
   05 - 6 I D - 2 0 <b>3 5 -</b> 2	   RMS-4518	   3/1R	P P P	   2/1R	1 P P	0, 5, 11	
   05 - 610 - 2036 - 1	   RMS-4501	1/1	   P P P	1/1	1	0, 11	
  05-610-2036-2	   RMS-4502	   3/1R	PPP	2/1R	1 P P	0, 5, 11	i I
   05-610-2129-1	  RMS-4266	3/3	   P P P	3/2R	1 NA NA	4, 7, 11, 15	į x
   05-61D-2129-1	   RMS - 4332	3/3	   P P P	3/2R	1 1 NA NA	4, 7, 11, 15	X

## EPD&C/RMS APPENDIX F (05-61D2 Cont'd) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIF	IERS	   N	A S A	     1	OA	   RECOMMENDATI	ON S
NASA FMEA NUMBER	ASSESSMENT IOA NUMBER		     SCREENS	   CRIT   HW/F	•	RESOLUTION CODES	    ISSUE
05-61D-2130-1	RMS-4244	3/3	P P P	3/2R	1 NA NA	·   4, 7, 11, 15	x
  05-610-2130-1	  RMS-4310	3/3	   P P P	3/2R	   1 NA NA	   4, 7, 11, 15	   x
05-61D-2131-1	RMS-4210	3/3	   P P P	3/2R	I I 1 NA NA	   4, 7, 11, 15	   x
05-61D-2131-1	RMS-4288	3/3	PPP	3/2R	   1 NA NA	4, 7, 11, 15	   x
05-610-2500-2	  RMS-4578	3/1R	   P P P	2/1R	   1 P P	0, 3, 11	
  05-61D-2501-2		3/1R	   P P P	2/1R	   1 P P	0, 3, 11	
   05 - 61D - 2502 - 2	RMS-4572	3/1R	PNAP	2/1R	   1 P P	0, 3, 11	
   05 - 6 I D - 25 03 - 2	RMS-4548	3/1R	PPP	2/1R	   1 P P	0, 3, 11	
  05-610-2504-2	RMS-4566	3/1R	   P P P	2/1R	   1 P P	0, 3, 11	
   05 - 61D - 2505 - 2	RMS-4542	3/1R	   P P P	2/1R	   1 P P	0, 3, 11	1
   05 - 61D - 2506 - 2	RMS-4560	3/1R		2/1R	   1 P P	0, 3, 11	
  05-61D-2507-2	RMS-4536	3/1R		2/1R	   1 P P	0, 3, 11	1
   05 - 61D - 2508 - 1	RMS-4575	2/1R	P NA P	2/1R	1 P P	0, 7, 8, 11	
   05 - 610 - 2508 - 1	P    RMS-4577	2/1R	P NA P	2/1R	1 P P	0, 7, 8, 11	
   05 - 610 - 2508 - 2	  RMS-4579	3/1R	P P P	2/1R	1 P P	0, 3, 11	
   05 - 61D - 2509 - 1		2/1R	P P P	2/1R	1 P P	0, 7, 8, 11	
   05 - 61D - 2509 - 1	  RMS-4553	2/1R	P NA P	2/1R	1	0, 7, 8, 11	
05-61D-2509-2		3/1R	P P P	2/1R	1	0, 3, 11	
05-6ID-2510-1	  RMS-4569	2/1R	P NA P	2/1R	1 P P	0, 7, 8, 11	
05-610-2510-1	  RMS-4571	2/1R	P NA P	2/1R	1	0, 7, 8, 11	
05-61D-2510-2	  RMS-4573	3/1R	PPP	2/1R	1	0, 3, 11	

## EPD&C/RMS APPENDIX F (05-61D2 Concluded) NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

IDENTIFIERS		NASA		IOA		RECOMMENDATIONS	
NASA FMEA NUMBER	  ASSESSMENT   IOA NUMBER	CRIT   HW/F	SCREENS	CRIT HW/F	,	RESOLUTION CODES	    188UE
05-610-2511-1	RMS-4545	2/1R	P NA P	2/1R	1 P P	0, 7, 8, 11	
05-610-2511-1	  RMS-4547	2/1R	P NA P	   2/1R	   1 P P	0, 7, 8, 11	
05-6ID-2511-2	  RMS-4549	3/1R	PPP	   2/1R	   1 P P	0, 3, 11	
05-610-2512-1	  RMS-4563	2/1R	P NA P	   2/1R	   1 P P	0, 7, 8, 11	
05-610-2512-1	  RMS-4565	2/1R	   P NA P	   2/1R	   1 P P	0, 7, 8, 11	
05-610-2512-2	  RMS-4567	3/1R	   P P P	   2/1R	!   1 P P	0, 3, 11	 
05-610-2513-1	  RMS-4539	2/1R	   P NA P	   2/1R	   1 P P	   0, 7, 8, 11	
05-6ID-2513-1	  RMS-4541	   2/1R	   P NA P	   2/1R	   1 P P	   0, 7, 8, 11	
05-610-2513-2	   RMS-4543	   3/1R	   P P P	   2/1R	   1 P P	   0, 3, 11	
05-6ID-2514-1	   RMS - 4557	   2/1R	   P NA P	   2/1R	   1 P P	   0, 7, 8, 11 :	1
05-6ID-2514-1	   RMS-4559	   2/1R	   P NA P	2/1R	   1 P P	   0, 7, 8, 11	
   05 - 61D - 2514 - 2	   RMS-4561	   3/1R	   P P P	   2/1R	   1 P P	   0, 3, 11	
  05-610-2515-1	   RMS - 4533	   2/1R	   P NA P	   2/1R	   1 P P	   0, 7, 8, 11	
   05-610-2515-1	   RMS - 4535	   2/1R	   P NA P	   2/1R	1 P P	   0, 7, 8, 11	
   05 - 610 - 2515 - 2	   RMS-4537	   3/1R	   P P P	   2/1R	   1 P P	   0, 3, 11	1

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# Independent Orbiter Assessment Assessment of the EPD&C/RMS FMEA CIL

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#### EXECUTIVE SUMMARY

The McDonnell Douglas Astronautics Company (MDAC) was selected in June 1986 to perform an Independent Orbiter Assessment (IOA) of the Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL). Direction was given by the STS Orbiter and GFE Projects Office to perform the hardware analysis using the instructions and ground rules defined in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986.

The IOA effort first completed an analysis of the Electrical Power Distribution and Control (EPD&C)/Remote Manipulator System (RMS) hardware, generating draft failure modes and potential critical items. To preserve independence, this analysis was accomplished without reliance upon the results contained within the NASA FMEA/CIL documentation. The IOA analysis of the EPD&C/RMS hardware initially generated three hundred and fortyfive (345) failure mode worksheets and identified one hundred and seventeen (117) Potential Critical Items (PCIs) before starting the assessment process. These analysis results were compared to the proposed NASA Post 51-L baseline of one hundred and thirty two (132) FMEAs and sixty six (66) CIL items which were -generated using the NSTS=22206 FMEA/CIL instructions - IOA generated failure mode analysis worksheets for both port and starboard Remote Manipulator Systems whereas the NASA generated TMEAS for only one system (did not specify which). The Igh analysis was performed on a component level for components assigned reference designator numbers on the drawings with one component per worksheet. The NASA analysis was performed with In some cases the like multiple similar components on one FMEA. WASA RMEAS were generated for an entire circuit without necessarily specifying the components included in the circuit by any identification number, thus direct comparisons of the IOA and NASA analyses were not meaningful in the sense of numbers of failures and identification of criticalities that have any uniformity. Efforts to compare the two analyses required consolidation of components in all but a few cases where the items were single point failure items as some of the switches were found to be. Twenty-eight (28) additional IOA failure mode analysis worksheets were generated to facilitate comparison. Upon completion of the assessment, five (5) issue items were identified that involved critical items where IOA recommends that NASA FMEAs generated for that failure mode of the component or where the NASA Criticality for that failure mode of that component be upgraded. There were also six (6) issues identified where IOA recommends upgrading of the NASA assigned criticality but these are not critical Items list candidates.

Some of the miscompares arose due to differences between the NASA and IOA FMEA/CIL preparation instructions. NASA had used an older ground rules document which has since been superseded by the NSTS 22206 used by the IOA. After comparison, there were no other discrepancies found that were not already identified by NASA, and the remaining issues may be attributed to differences in ground rules.

It may be noted that numerical values appear to disagree between charts and tables. Figure 1 "Remote Manipulator Arm" block lists 5 issues for FMEAs and 5 issues for CIL items. The FMEA issues are also CIL issues. Figure 1 "Arm Shoulder Jettison" block lists 6 FMEA issues which are not considered critical items.